FINAL REPORT

20010170

DEVELOPMENT AND MARKET TESTING OF VALUE ADDED PRODUCTS FOR BISON MEAT EXTENSION

March 2004
Funded by the Agri-Food Innovation Fund

Prepared by: Saskatchewan Bison Association

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**Final Report for AFIF Project 20010170:
Development and Market Testing of Value Added Products for Bison Meat Extension**

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Bison Marketing: Understanding the Consumer by Hobbs, Sanderson and Cunningham

Marketing of Bison Products by Wilkins

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FINAL REPORT

TO THE

AGRI-FOOD INNOVATION FUND

PROJECT 20010170

DEVELOPMENT AND MARKET TESTING OF VALUE ADDED PRODUCTS FOR BISON MEAT EXTENSION

SUBMITTED BY THE SASKATCHEWAN BISON ASSOCIATION

FEBRUARY, 2004

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ACKNOWLEDGEMENTS

The Saskatchewan Bison Association wishes to acknowledge the funding support of the Agri-Food Innovation Fund (AFIF), which made this project possible. The Association wishes to extend appreciation to AFIF officials for their counsel and co-operation throughout the project.

The Association also wishes to acknowledge the important roles played by the project partners, which were integral to the success of the project. This includes Dr. Jill Hobbs and staff of the Specialized Livestock Marketing Research Group (SLMRG), Department of Agricultural Economics, University of Saskatchewan; Dr. Jag Dhanda and Paul Rogers and staff of the Specialty Livestock Value-Added Program (SLVAP), Department of Applied Microbiology and Food Science, University of Saskatchewan; Dan Prefontaine and staff of the Saskatchewan Food Industry Development Center; and Peter Wilkins of Peter Wilkins and Associates. Their counsel, co-operation, and efforts were vital to the success of the project.

The role played by commercial entities in the retail trials of the products is acknowledged and thanked, as this phase was integral to the successful completion of the project. This includes the Hungarian Club and La Bodega Restaurants in Regina; Federated Co-operatives Ltd. and their Quance Street Marketplace in Regina as well as all three Saskatoon stores; Saslove's Meat Market in Ottawa and Pusaterie's in Toronto.

EXECUTIVE SUMMARY

The Agri-Food Innovation Fund approved funding for this project based on four objectives:

- To analyze the consumer demand for bison in key strategic Canadian markets focusing on lower-value bison cuts and utilizing qualitative and quantitative consumer research.
- To develop value added products for the initial trial and to continue value added product development in follow-up to the consumer preference trials and experimental auctions.
- To conduct retail market trials to explore the product and market potential with retailers and consumers.
- To develop long term marketing and supply chain strategies for these products and bison overall.

This final report provides an overview of and supporting reports for the four Phases of the Project:

- **Phase One:** Development of a bison burger, kebab, stew, and deli roast and testing with 459 consumers at Vancouver, Leduc/Edmonton, Saskatoon, Guelph, and Quebec City in 2001/2002.
- **Phase Two:** Development of a bison garlic sausage and three flavours of marinated bison strips for testing with consumers at Canadian Western Agribition in 2002 and consumers in Guelph and Quebec City in early 2003.
- **Phase Three:** Successful completion of retail trials in two Regina restaurants and six retail food stores in Regina, Saskatoon, Ottawa, and Toronto.
- **Phase Four:** Development of key learnings and recommendations for long-term marketing and value chain strategies.

The final report contains valuable information that can assist producers and industry stakeholders in product development and developing marketing strategies. The project has been successful in completing the steps from initial product development to commercialization in the marketplace.

BACKGROUND AND OBJECTIVES

This project was undertaken because the Saskatchewan and Canadian bison industries have had very little reliable information on the size of the potential market in Canada for different bison cuts, the price competitiveness of bison with competitor meats, and the extent to which consumers will trade-off price for other product attributes when purchasing bison. At the same time, the bison industry has been challenged in finding markets for lower value cuts including trim-based products.

Funding for the project was approved based on the following objectives:

- To analyze the consumer demand for bison in key strategic Canadian markets focusing on lower-value bison cuts and utilizing qualitative and quantitative consumer research.
- To develop value-added products for the initial trial and to continue value added product development in follow-up to the consumer preference trials and experimental auctions.
- To conduct retail market trials to explore the product and market potential with retailers and consumers.
- To develop long-term marketing and supply chain strategies for these products and bison overall.

Overall, the project was to provide the Saskatchewan bison industry with a clearer understanding of consumer preferences and key information for future product development and marketing strategies.

PROJECT ACTIVITIES AND ACHIEVEMENTS

Phase One

Four further processed bison products were developed by the SLVAP for the Phase One consumer panels that were conducted in Vancouver, Leduc/Edmonton, Saskatoon, Guelph, and Quebec City. The products were a burger, kabob, stew, and deli roast. A total of 459 participants were involved in these five consumer panels.

This consumer research in Phase One had four key objectives:

1. To assess consumer preferences for these four value added bison products.
2. To determine consumers' willingness-to-pay for these bison products and the relative price competitiveness of bison.
3. To explorer avenues for further value added product development in bison.
4. To identify consumer segments with specific preferences and attitudes towards bison.

A copy of the "Phase One Report: Results of Consumer Panels" by Jill Hobbs and Kim Sanderson dated June 28, 2002 is being submitted as part of this report. It contains valuable consumer research information.

Phase Two

Phase Two of the project had three objectives:

1. To develop new value added products.
2. To assess consumer preferences for these products.
3. To assess consumers' willingness to pay and implications for competitive pricing strategies.

In consultation with the SBA and the SLMRG, the SLVAP developed two additional products for Phase Two: a bison garlic sausage and three flavours of seasoned bison·strips (roasted garlic and pepper, mesquite barbeque, and ginger teriyaki).

Product development/experimentation continued in the late summer and early fall of 2002 culminating in the manufacturing of these products for sampling and sale at Canadian Western Agribition 2002. Approximately, 300 kilograms of these products were sampled to CWA visitors by SBA member volunteers over the six days of CWA 2002 at a SBA trade booth in the Prairie Cuisine area of the Lower Queensbury. Some extremely valuable consumer reaction and input was gained in this exercise.

The products were then further refined based on the feedback from CWA 2002 and manufactured for consumer panels that were completed in Guelph in December of 2003 and Montreal in January of 2003. A copy of the "Phase Two Report: Results of Ontario and Quebec Consumer Panels" by Jill Hobbs and Cody Cuningham dated January 30, 2003 is being submitted as part of this report. As with the Phase One report, it contains valuable consumer research information.

Also being submitted with this report is a copy of "Bison Marketing: Understanding the Consumer", the Final Report prepared for the SBA by Jill Hobbs, Kim Sanderson, and Cody Cuningham of the SLMRG. This Report provides an overview of Phases One and Two as well as excellent research and analysis on Consumer Expectations, Perceptions of Bison, Marketing Bison, Identifying Market Segments, and Conclusions in Developing a Marketing Strategy.

Phase Three

Phase Three, the Bison Products Retail Market Trials, had three objectives:

1. To introduce bison products for retail sale in a grocery chain store setting.
2. To introduce bison products to the menu of a restaurant chain.
3. To measure response to those products by consumers and marketers.

Peter Wilkins of P. Wilkins and Associates of Saskatoon was engaged by the Association as the consultant for Phase Three. Mr. Wilkins role included:

- Communications with 14 business entities for an initial assessment of their level of interest in value added bison products.
- Development of packaging and point of sale information; coordination with the Saskatchewan Food Industry Development Center to secure necessary federal government approvals for labeling; and coordination of production and distribution for the retail trials.
- Communications and visits with retail and wholesale outlets and restaurants to seek their involvement in the retail trials. This included five companies in the Vancouver area, nine companies in the Greater Toronto Area, seven companies in the Montreal region, two companies in Edmonton, and four companies in Saskatchewan.

In addition to Mr. Wilkins' efforts, the Executive Director of the SBA, Nial Kuyek, visited markets in Toronto and Ottawa in August of 2003 to seek their involvement in retail trials.

The initiation and completion of retail trials in Phase Three were delayed because of delays experienced in obtaining necessary federal government approvals and delays experienced in manufacturing the packaging. Thus, product was not available for the retail trials until July of 2003. These delays complicated the process of securing the involvement of retailers, wholesalers, and restaurants in the retail trials and, subsequently, the timing of the retail trials.

Ultimately, the following retail trials were initiated and completed over the period from July to December of 2003:

- Restaurant trials with the Hungarian Club and La Bodega restaurants in Regina.
- Retail trials with Federated Co-operatives Ltd. at their Quance Street Marketplace in Regina as well as all three Saskatoon stores.
- Retail trials at two locations of Saslove's Meat Market in Ottawa.
- A limited retail trial at Pusaterie's in Toronto.

These were successful retail trials from the perspective of both quality and quantity.

A copy of "Marketing of Bison Products" prepared by P. Wilkins and Associates as their final report on Phase Three is being submitted as part of this report. This report provides details on the key elements of Phase Three described herein.

It should also be noted that over 14,000 samples of the bison garlic sausage were sampled to CWA 2003 visitors by SBA member volunteers over six days at the SBA trade booth in the Prairie Cuisine area of the Lower Queensbury. It was a very popular booth with positive comments on the product and questions as to where it could be purchased.

Phase Four

Phase Four of the project had three objectives:

1. To develop a long-term marketing strategy with respect to product, pricing, and promotion.
2. To provide recommendations for supply chain linkage strategies for the Saskatchewan bison industry.
3. To begin implementation of these long-term strategies through the preparation of consumer education/promotional materials and dissemination of the information to Saskatchewan industry stakeholders.

The project through Phases One to Three must be judged as successful in terms of the integration of activities towards the following results:

- The quality of the products developed.
- The quality and variety of the restaurant and retail trials conducted.
- The strong wholesaler/retailer and consumer interest in these specific products and bison overall.
- The quality and relevance of the market research that was completed.

These successes, of course, shaped the activities that would be pursued to achieve the Phase Four objectives.

On July 24 and 25 of 2003, a workshop involving the SBA Board of Directors and staff and the project partners was held to:

- Review results of work-completed to-date and to identify key learnings.
- Develop common understandings of value chains, market issues, and the potential for bison products across Canada.
- Identify preliminary recommendations for marketing and value chain strategies.
- Identify preliminary recommendations for communications and extension activities.

Since this workshop and with the completion of Phase Three, SBA Board members and staff have reviewed and refined these recommendations. Key learnings and recommendations are presented in the next section of this report. The recommendations address the 2nd and 3rd objectives of Phase Four.

The 1st objective, to develop a long-term marketing strategy with respect to product, pricing, and promotion, is integral to continuation of the product and was one that had to be addressed in Phase Three in discussions with wholesalers/retailers about undertaking retail trials. Should the retail trials be successful, the wholesalers/retailers wanted some assurance that there would be continuity of product. SBA provided that assurance indicating that supply of product would continue through SBA until a long-term marketing strategy was developed.

From August to December of 2003, options for continuation of the product beyond this project were evaluated. Over this period, the President of SBA, Mark Silzer, and the Executive Director, Nial Kuyek, met with a processor and wholesaler/retailer to pursue the long-term marketing strategy option endorsed by the SBA Board of Directors at their December 16, 2003 meeting. The final section of this report presents the outcome of these discussions.

KEY LEARNINGS AND RECOMMENDATIONS

Key Learnings

The following key learnings were identified in the course of the project and have particular relevance towards the development of marketing and value chain strategies:

1. The bison industry must be able to provide a consistent product both in terms of quality and quantity. This consistency in quality and quantity has been and will continue to be a major challenge in capacity to pursue, secure and service larger restaurant and retail chains. In the short-term, the market development focus may need to be selectively targeted.
2. Consumer education is critical. While there are regional differences, the vast majority of Canadian consumers lack knowledge about the product and industry. The bison industry needs a major and sustained educational initiative to introduce consumers to bison products and the industry. This educational initiative should strategically target specific markets. The capacity and credibility of the industry in undertaking this initiative will need to be high.
3. A key strategy that should be utilized to address demographic and regional differences is target marketing. For example, some consumers are seeking convenience. Many consumers are attracted by the health attributes and purity of bison (no hormones or anti-biotic). There is no single "silver bullet" for marketing in Canada or abroad. Rather, a variety of targeted marketing strategies should be pursued.
4. It will be important to select appropriate products for specific markets. Regardless of the products and the attributes highlighted, the products must taste good and be consistent with the overall image which the industry wishes to create for products and the industry overall.
5. Regional, national and international markets all have potential. The regional market may be the easiest to develop. However, the national market will be key to long-term viability and growth.
6. Projects like this require strong and consistent leadership, management, communications, and co-ordination. Clear and early communications is needed relative to project objectives, management, and timelines.
7. Building effective relationships with wholesalers/retailers early in the process to develop the flow of information and feedback is important and valuable. While this requires time and effort, the information and feedback gained on markets and consumers is extremely valuable.
8. All players in such projects must be strongly committed to the project and to working together effectively. It is important to build effective working relationships and communications as early as possible to maximize the free flow of information, feedback, and ideas for improvement.

9. This project has produced significant information that should be used in future planning and marketing strategies by stakeholders in the industry. There is a great deal more that can be learned in analysis of the information that has been generated. For example, the Final Report prepared by Jill Hobbs provides an overview of Phases One and Two as well as excellent research and analysis on consumer Expectations, Consumer Perceptions of Bison, Marketing Bison, Identifying Market Segments, and Conclusions in Developing a Marketing Strategy.
10. The industry must understand the costs of production and establish consumer pricing and marketing to generate adequate returns from the producer level upwards in the value chain.
11. Involvement in marketing by a producer organization may be a competitive advantage in penetrating new markets. For example, the direct involvement of the Association in seeking and securing market trials in Ottawa and Toronto was successful when previous attempts by the project consultant to secure retail trials outside of Saskatchewan were not successful. Similarly, the ability to link a product or products to a producer organization by logo and other means may have marketing potential that would benefit both producers and wholesalers/retailers.
12. Consumers see "natural" products in a favourable light. This trend has been continuing and has been accelerated by the BSE and other food safety issues. The bison industry should capitalize on the "natural" production of bison and the "purity" of bison meat products.
13. The industry needs to reach high margin markets but must have the capacity to pursue, secure, and service those markets. Marketing decisions must address product quality and quantity and be supported by appropriate strategies for this target.
14. All of the possibilities for bison products are not yet known and there is potential for further development of some of the products involved in this project like the kebabs or stew. This demonstrates the need for and important role-played by the Saskatchewan Food Innovation Program and the Saskatchewan Food Industry Development Center.
15. Development, approval and manufacturing of labels and packaging or the securing and completion of retail trials takes time and can involve delays as occurred with this project. For example, a retailer may be keen on the retail trial but it must fit into their retail merchandising agenda or it may be that the product is best marketed in a particular season (barbeque or non-barbeque). These retail realities may not be consistent with the project timelines and flexibility is required. This project experienced delays involving both the federal approvals necessary and the securing and completion of retail trials. These were learnings for the Association. Future projects must recognize the importance of and the time required for these activities in developing project timelines.

Recommendations for Long-Term Marketing and Value Chain Strategies

Based on the experience of the project and the Key Learnings identified, the following are recommended as long-term marketing and value chain strategies for bison:

1. There is significant need for consumer education to build knowledge and the image of bison products and the industry overall. This includes the history of bison, the health attributes of bison, the "natural" production of bison and the "purity" of bison meat products
2. Given demographic and regional differences in the Canadian marketplace, target marketing must be utilized to provide different products supported by tailored marketing strategies to the various market segments.
3. Our own domestic market appears to have significant growth potential. Industry stakeholders need to be collaborative and innovative in pursuing domestic opportunities. From Saskatchewan's perspective, this should involve targeting large urban populations that are not now served by their provincial bison industries.
4. The current marketing system for bison is fragmented. Without a federally inspected slaughter facility in Saskatchewan and with a lack of competition at processing and wholesaling levels, producers feel that the processing and wholesaling levels are not price competitive and fair. The further development of slaughter and processing infrastructure in Saskatchewan is critical to capturing value added opportunities and the ability to market inter-provincially and internationally. This can be achieved through development of new federally inspected facilities or through a new system of inter-provincial equivalency.
5. There is a trend for larger retailer/wholesalers to prefer to deal with single entities for supply and distribution of meat products including bison. This provides challenges for individual bison producers or business entities that want to market bison meat and processed bison products to these retailer/wholesalers. The area with more opportunity may be to work with processors who already have the production and distribution capacity. This could involve both ensuring the supply of bison meat and the development of processed bison products.
6. Overall, the industry needs to refine its business practices. An effective value chain requires industry understanding of the cost of production. Industry stakeholders must establish consumer pricing and marketing to generate adequate returns from the producer level upwards in the value chain.
7. The industry must strive to maintain a visible marketplace presence in the face of the BSE crisis and the high profile of the beef lobby. Support from government for smaller industry players such as bison must be sought and obtained if they are to reach their full potential.

INDICATIONS FOR FURTHER DEVELOPMENT

Objectives 1 and 2 of Phase Four will be subject to further actions by the Saskatchewan Bison Association as outlined in the following:

Objective 1

To develop a long-term strategy for the production, marketing, pricing, and promotion of the products developed in this project, the Saskatchewan Bison Association evaluated options for continuation of the production and marketing of the products beyond the project's conclusion. In December of 2003, the President of SBA, Mark Silzer, and the Executive Director, Nial Kuyek, met with a processor and wholesaler/retailer to pursue the long-term marketing strategy option endorsed by the SBA Board of Directors. As these discussions will continue, the identities of the processor and wholesaler/retailer are being kept confidential and not included in this report. Similarly, the product pricing and recipes are being kept confidential and not included in this report. While not included in this report, this information will be provided to the Agri-Food Innovation Fund administration for accountability purposes. It should be noted that, other than this sensitive business development information, all other information relative to the project is contained in this final report or the reports that support the final report.
A three way strategic alliance or partnership has been initially discussed with the processor and wholesaler/retailer and will be further pursued by the Saskatchewan Bison Association in 2004. It is based on the following roles for the three partners:

- The Saskatchewan Bison Association brings the products with their approvals and consumer acceptance. In addition, the ability to link products to a producer organization may have marketing potential that would benefit producers, the processor, and the wholesaler/retailer.
- The processor brings a solid reputation and capacity in production and distribution. The processor is already a preferred supplier of the wholesaler/retailer.
- The wholesaler/retailer brings a significant retail presence in both Saskatchewan and Western Canada.

From initial discussions, it appears that the wholesaler/retailer is interested in immediately retailing the bison garlic sausage. In terms of the marinated bison strips, the wholesaler/retailer is interested but wants to further review the products with the Association and the processor. The processor is interested in the partnership and would prefer a royalty basis where the production and distribution of these products are integrated into their overall operations. The Association would receive royalties and participate in co-marketing activities. The royalty scheme could provide the association with capital to pursue further market and product development.

The Saskatchewan Bison Association will be pursuing this potential strategic alliance or partnership beyond the submission of this report in 2004. Should a strategic alliance or partnership of this nature become reality, it will be the final step towards the total success of this project from the initial phase of product development to ultimate commercialization in the marketplace.

Objective 3

The first part of this objective was "to begin implementation of these long-term strategies through the preparation of consumer education/promotional materials". Consumer education was the primary purpose in the Association undertaking a trade booth in the Prairie Cuisine area of the Lower Queensbury during Canadian Western Agribition in 2002 and 2003. Bison was introduced to thousands of rural and urban consumers through sampling of the garlic sausage and the marinated strips in 2002 and the garlic sausage in 2003. The trade booth utilized existing consumer education/promotional materials produced by the Canadian Bison Association. The booth was operated by Association member volunteers to put consumers across the table from producers in dialogue about bison.

In addition, a "point of sale" card was developed for consumer education and promotional support in the retails trials. Done in both official languages, the card contains cooking instructions, nutritional information on bison, and contact information for the Association.

The second part of this objective requires dissemination of the project results to Saskatchewan industry stakeholders. It is the Association's understanding that, once submitted, the final report will be publicly available through the Agri-Food Innovation Fund. In addition, the Association will undertake the following activities to communicate with Saskatchewan industry stakeholders:

- The final report will be posted on the Saskatchewan Bison Association's web-site.
- SBA will develop articles for SaskBISONews, SBA's newsletter, and Smoke Signals, the Canadian Bison Association's magazine that will provide an overview of the project and refer those interested to the final report on the web-site.
- SBA will engage key media in discussion of the project.
- SBA attempt to make representatives available for discussion of the project and report at public events as requested.

PROJECT PUBLIC INFORMATION MATERIALS

The following project materials are being submitted with the final report as supporting information:

- The packaging for the bison garlic sausage.
- The packaging for the marinated bison strips.
- The "point of sale" card developed for consumer education and promotional support in the retail trials.

AGRI-FOOD INNOVATION FUND ACKNOWLEDGEMENT

Throughout the project, Agri-Food Innovation Fund support was acknowledged in a variety of effective means:

- Articles in SaskBISONews and Smoke Signals.
- Project updates at Annual General Meetings, Field Days, and member meetings.
- SBA's trade booth at Canadian Western Agribition in 2002 and 2003.

BISON MARKETING PROJECT
For the Saskatchewan Bison Association

PHASE ONE REPORT
RESULTS OF CONSUMER PANELS

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JUNE 28 2002

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BISON MARKETING PROJECT
For the Saskatchewan Bison Association

PHASE ONE REPORT: RESULTS OF CONSUMER PANELS

EXECUTIVE SUMMARY

This report is a summary of Phase One of a major consumer research initiative to evaluate Canadian consumer attitudes towards bison. The key objectives of this phase were to assess consumer preferences and willingness-to-pay for four existing value-added bison products, explore the potential for further value-added product development and identify specific preferences and attitudes of consumer segments. To achieve these goals, consumer panels were undertaken in five Canadian locations in Saskatchewan, Alberta, British Columbia, Ontario and Québec. Consumer panelists completed three tasks including tasting and evaluating four value-added bison products, completion of a written survey and participating in an 'experimental auction'. The industry has identified as a priority the need to strengthen product development and marketing of lower quality cuts, which traditionally have posed challenges in terms of product tenderness. The four products used in the taste panels were a bison burger, stew, deli roast and kabob.

The most favourable results from the tasting and evaluation of the four products occurred in Saskatchewan (Saskatoon) and Alberta (Leduc) while respondents in BC (Vancouver) were the least receptive to the bison meat products. The kabob received the highest ranking relative to the other three products in three of the five locations. Willingness-to-pay was measured in a number of different ways, including a simple stated willingness-to-pay. This varied depending on location and the product being evaluated. Where respondents would be most likely to purchase the products (restaurant, grocery store, etc.) also depended on the product being offered.

The survey identified nutritional content, fat and cholesterol content, availability at regular grocery store, and price relative to other meats as important to consumers when buying a meat product. Respondents had an overall positive image of the bison industry, although the reasons for this image were not clear and require further investigation. Preference for the name "bison" versus "buffalo" was not consistent across the five locations but overall only 15% of respondents indicated that they preferred the name "buffalo". Respondents' perceptions about bison products appeared to change somewhat depending on the specific product being considered. However overall bison has the image of being healthy and a unique heritage meat. Availability of the products was the most often cited reason for not having purchased bison meat.

The results of the laboratory market bidding experiment – which is another method of gauging willingness-to-pay –indicate that consumers are willing to pay more for bison that has a lower fat content and is produced without the use of administered growth hormones. A more detailed economic analysis of the relative costs and benefits of providing these attributes is necessary to determine the overall benefit to the industry. The sensitivity of the willingness-to-pay for these attributes requires research. These results represent a first step in building a comprehensive picture of consumer attitudes towards bison and the value of different marketing strategies. The subsequent phases of this project will build on this analysis.

BISON MARKETING PROJECT
For the Saskatchewan Bison Association

PHASE ONE CONSUMER PANELS REPORT

1. OBJECTIVES

The Bison Marketing Project is a major consumer research initiative being undertaken by the Saskatchewan Bison Association through the Specialized Livestock Marketing Research Group (SLMRG), Department of Agricultural Economics, University of Saskatchewan, the Specialty Livestock Valued Added Program, University of Saskatchewan, and the Food Centre, Saskatoon. Funding for this initiative has been provided by the Canada-Saskatchewan Agri-Food Innovation Fund (AFIF). The project is proceeding in four phases, consisting of two sets of consumer panels, a retail trial and recommendations for the development of an industry marketing strategy. Phase One, the first set of consumer panels, has been completed. This report summarizes the activities undertaken in Phase One by the Specialized Livestock Marketing Research Group and the results from the panels.

Phase One had four objectives:

a) to assess consumer preferences for four existing bison value-added bison products
b) to determine consumers' willingness-to-pay for these bison products and the relative price competitiveness of bison
c) to explore avenues for further value-added product development in bison
d) to identify consumer segments with specific preferences and attitudes towards bison.

Information from the Phase One consumer panels will feed directly into decisions regarding further product development and locations for the Phase Two consumer panels.

2. CONSUMER PANEL DESIGN

Consumer panels were conducted at five locations across Canada: Saskatoon (Saskatchewan), Leduc (Alberta), Vancouver/Burnaby (British Columbia), Guelph (Ontario) and Québec City (Québec). These sites were chosen to obtain a cross-Canada consumer representation in locations identified as being potential target markets. Participants took part in a taste panel, completed a written survey and participated in a laboratory market bidding experiment (also known as an experimental auction) designed to elicit willingness-to-pay information. A total of 459 people participated in the Phase One consumer panels.

Four bison products were developed by the Specialty Livestock Value-Added Program at the University of Saskatchewan for use in the consumer panels: a burger, kabob, stew and deli roast. The burgers and kabobs were cooked on-site at each consumer panel location on small portable grills purchased for the project. The order of presentation of the products was rotated throughout each of the locations. All respondents completed tasting of a product before the next product was introduced. At each location several panels were conducted, each lasting approximately two hours. Staff from the Specialized Livestock Marketing Group were present at all locations. Procedures at each location are summarized briefly below.

Saskatchewan

The first panel was conducted at the University of Saskatchewan in Saskatoon in March 2002. The panels were run by the Specialized Livestock Marketing Research Group (SLMRG), with the assistance of staff from the Department of Applied Microbiology and Food Science. On campus sensory and kitchen facilities were used. The sensory lab has 8 sensory booths, which are served from an adjoining kitchen. Respondents participated in groups of between 13 and 16, with half of each group completing the written survey while the other respondents participated in the taste testing, then the other half completed the taste panel, etc. When all participants had completed both the written and survey and taste testing, the whole group was brought together for the laboratory market in a nearby conference room.

A total of 89 respondents participated in the Saskatoon panels. Respondents were recruited from several specific socio-economic groups on campus, plus two groups of general public participants (approx. 30 people). The campus groups consisted of students, faculty, professional administrative staff and non-professional (maintenance) staff – the objective being to obtain a spread of education and income levels. Many of the general public participants were recruited through a City of Saskatoon web-based employee bulletin board, others from the regional health authority. Respondents were paid $30 to attend and given an additional $10 for the laboratory market. The $10 bidding experiment payment was used at all sites to ensure the endowment was consistent.

Alberta

The Food Processing and Development Centre (FPDC) at Leduc (near Edmonton) ran the Alberta panels in April 2002. Two staff from the SLMRG were present throughout. FPDC is a provincial government funded facility specializing in food product development that maintains a consumer database for the purposes of product testing. This facility has 10 sensory booths, with space to accommodate up to two more people, and so groups were usually kept to 10 people. Participants completed the tasting in the sensory lab and were then moved to a conference room for the survey and laboratory market session. Unfortunately, at Leduc it was discovered that the stew prepared for the Alberta experiments was not consistent with the earlier stew used in Saskatoon due to problems experienced in scaling-up production. This problem was subsequently rectified for all other locations, however, it may have affected the evaluation of the stew at Alberta. Adjustments to the cooking times for the kabobs were needed to account for differences in the size of the meat chunks. Respondents were recruited from the FPDC database, which included people from Leduc and the City of Edmonton. Respondents were paid $60, the Centre's standard fee for participation, plus the $10 laboratory market payment. A total of 94 respondents participated in the Alberta panels.

British Columbia

The BC trials were conducted in Burnaby, Vancouver in April 2002 with the assistance of Creative Consumer Contact Ltd. Two staff from SLMRG present. The facilities were such that respondents sat together at tables with four or five other individuals in a large room for the entire session. All sessions were monitored by staff from Creative Consumer Contact and the SLMRG, with respondents encouraged not to share opinions. Respondents were chosen from the company's database, using pre-approved screening questions and came from Burnaby and across Vancouver. Respondents were paid $40 for participation and the $10 laboratory market payment. A total of 98 people participated in the BC panels.

Ontario

The Ontario panels were conducted at Guelph with the assistance of Compusense Ltd. in April 2002. Two staff members from SLMRG were present for the panels. The facility has 8 sensory booths connected to a kitchen, plus an adjoining room where additional respondents participated at separate tables. Groups of 14-16 people participated. Compusense operates a full computerized sensory evaluation system, which enabled panelists to enter their responses using a computer (the evaluation questions were the same as the other 4 locations). After completing the taste test and computerized survey forms, respondents moved to a separate conference room for the laboratory market. Panelists were recruited from the company's consumer database, using a pre-approved screener. They were paid $50 for their participation (Compusense panelist payment rate) plus the $10 laboratory market payment. A total of 92 people participated in the Ontario panels.

Québec

The Québec panels were conducted in May 2002 at the University of Laval in Québec City, with the assistance of staff from the University of Laval Department of Agricultural Economics and Consumer Studies and the Department of Food Science and Nutrition. Two staff members from SLMRG were also present. The on-campus sensory facilities consisted of a sensory room with 17 separate booths, served from an adjacent kitchen. Groups of 12-14 participated in the research and were drawn from a cross-section of socio-economic groups across campus, as with the Saskatchewan experiments. After tasting and evaluating the four products, respondents were moved to a large classroom to complete the written survey and participate in the laboratory market. Payment rates were the same as used at the University of Saskatchewan, a $30 'recruitment' fee plus a subsequent $10 laboratory market payment. A total of 86 people participated in Québec.

3. SAMPLE DEMOGRAPHICS

Data were collected on the gender, age, household size, education, and income of respondents. Information was also collected on whether someone in the respondent's household had health related reasons for consuming meat lower in fat or cholesterol and the number of times they had tried bison. This section describes the sample demographics for the full sample of 459 people. Sample demographics by location are presented in Appendix A. As can be seen from the following graphs, the overall sample was fairly evenly distributed on the basis of gender, age, household size and income (Figures 1-4). There was a tendency for respondents to have a higher education level than the general population (Figure 5). This may be attributed to the fact that two of the consumer panels used university populations, albeit an attempt was made to sample a wide variety of persons within those populations, for example, including secretarial and maintenance staff. Comparison of the sample survey population and the Canadian population reveals that the sample was generally representative of the Canadian population based on gender, income, and age.

Figure 1: Sample Distribution by Gender

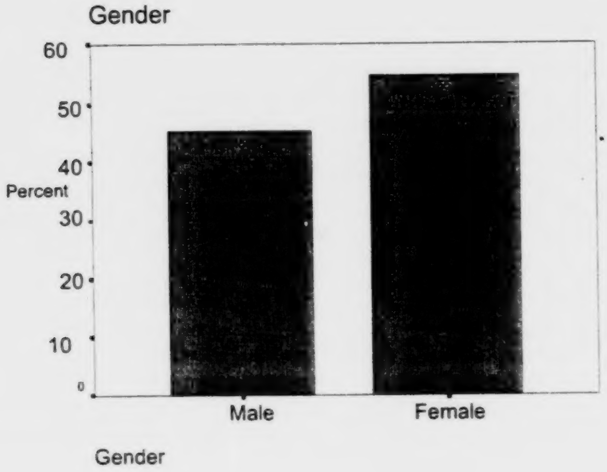


Figure 2: Sample Distribution by Age

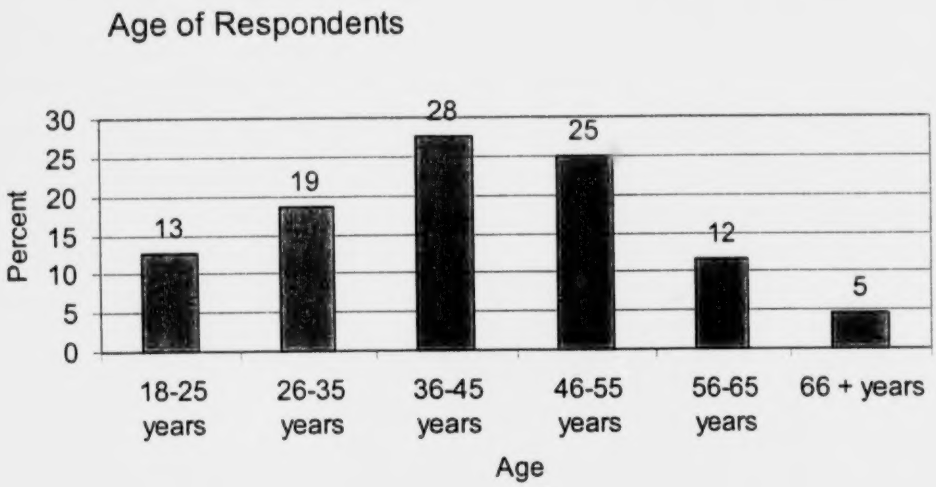
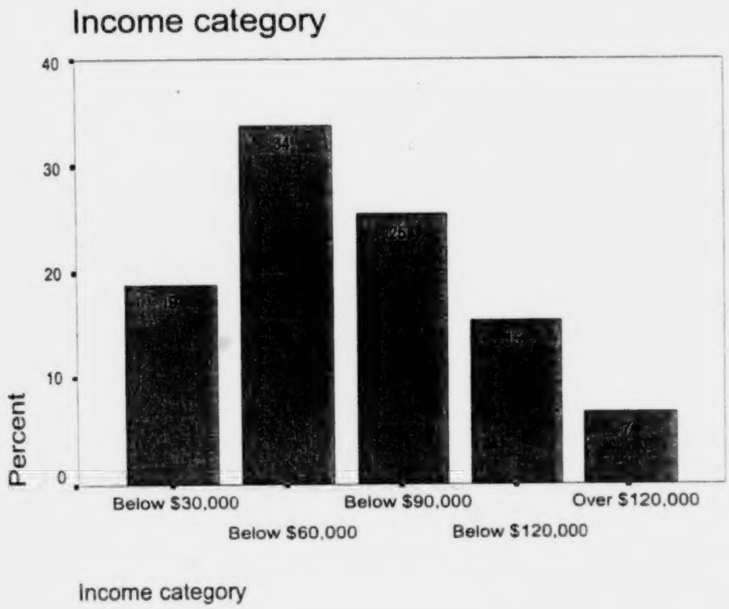


Figure 3: Sample Distribution by Income



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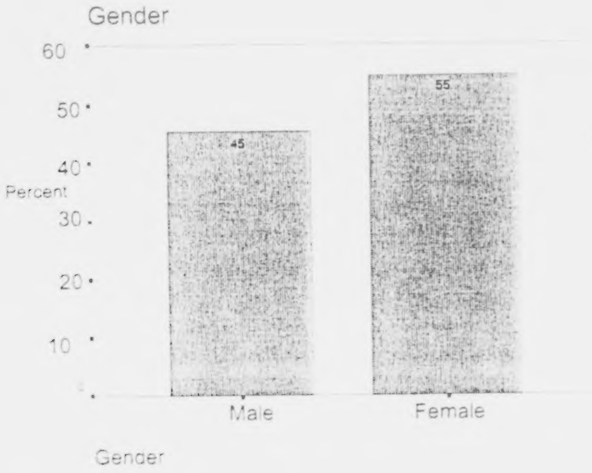


Figure 2: Sample Distribution by Age

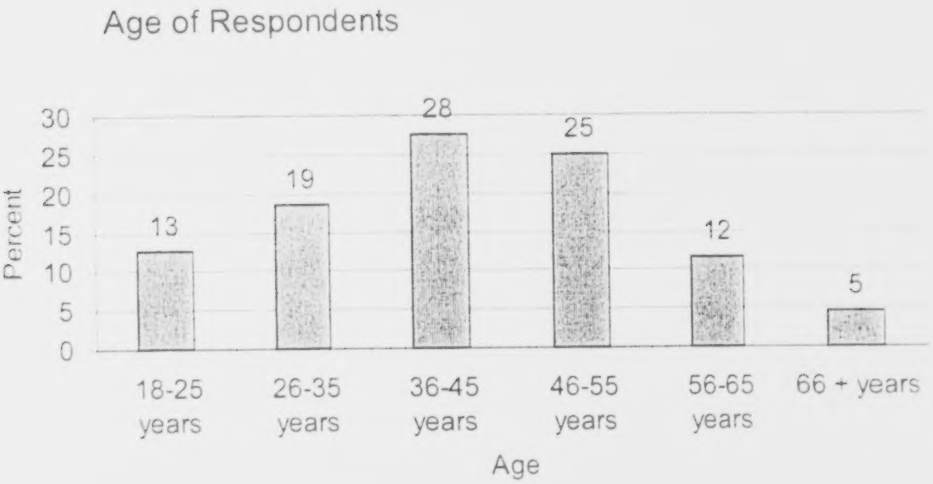


Figure 3: Sample Distribution by Income

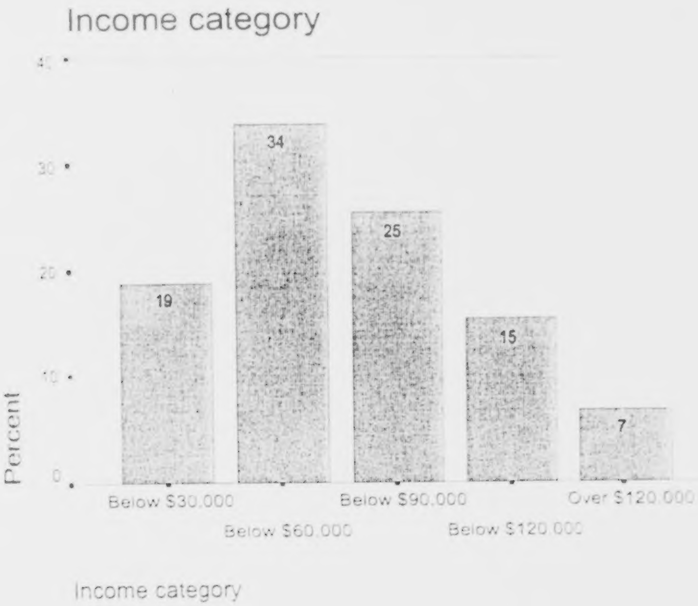


Figure 4: Sample Distribution by Number in Household

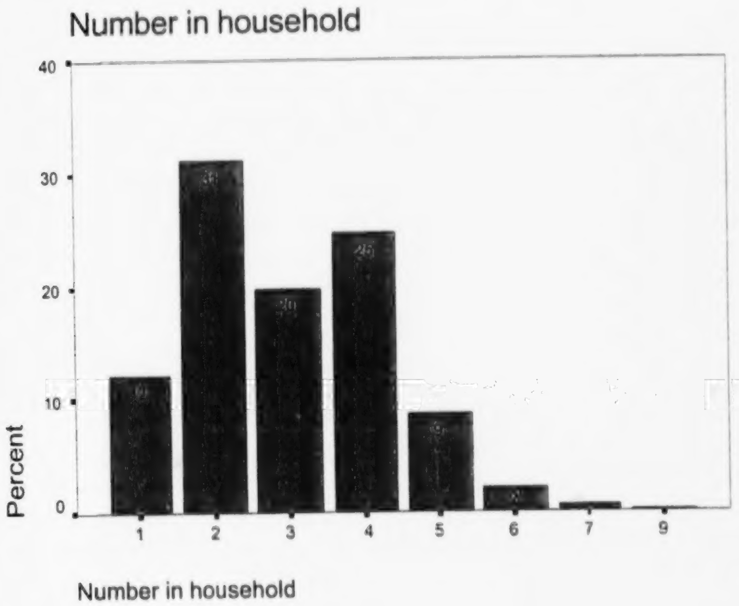
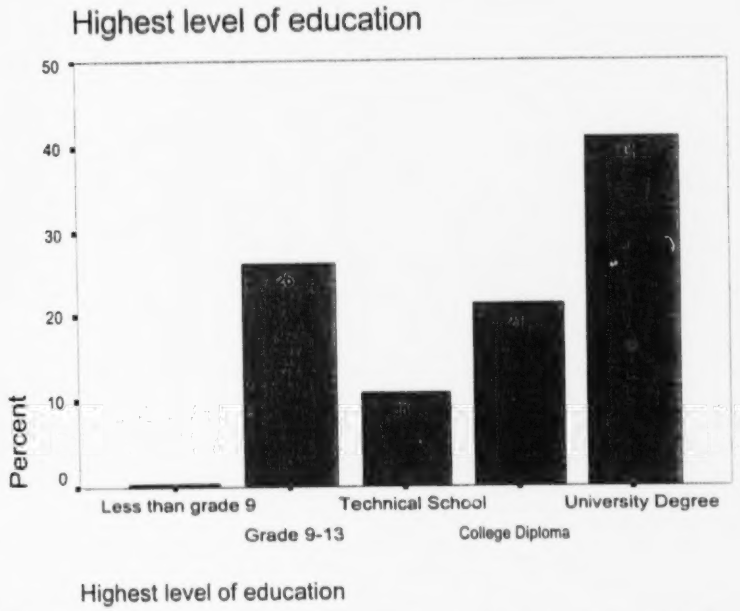


Figure 5: Sample Distribution by Education



Approximately 40% of respondents indicated that they had someone in their household who consumes meat that is lower in fat or cholesterol for a health-related reason (Figure 6). Almost 50% of respondents had never tried bison before the taste test and a further one-third (32%) had only tried it once or twice (Figure 7). However, the number of times respondents had tried bison varied considerably between the locations, with BC and Ontario both having almost 70% of respondents who had never tried bison while this number drops to close to 50% for Québec and 30% for both Alberta and Saskatchewan. These differences in experience with bison may explain some of the disparity of responses to the four products between locations.

Figure 6: Sample Distribution by Health-Related Diet Decisions

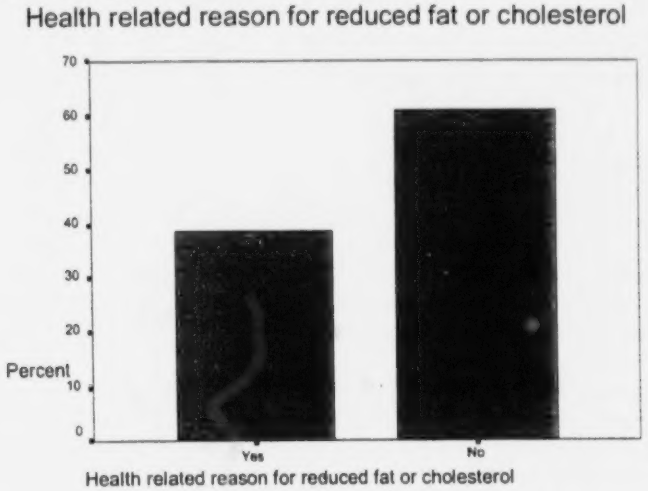


Figure 7: Sample Distribution by Number of Times Previously Tried Bison

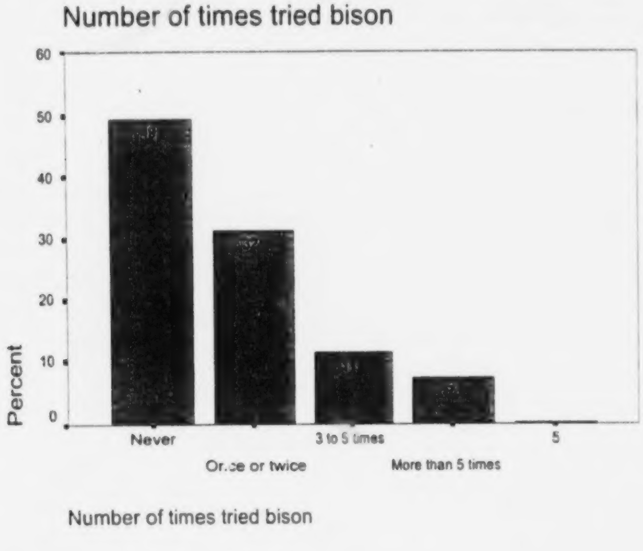


Figure 4: Sample Distribution by Number in Household

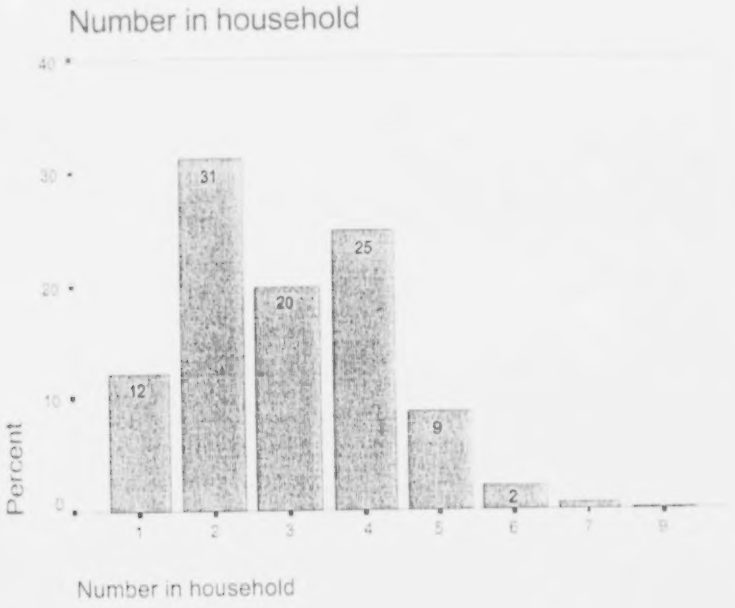
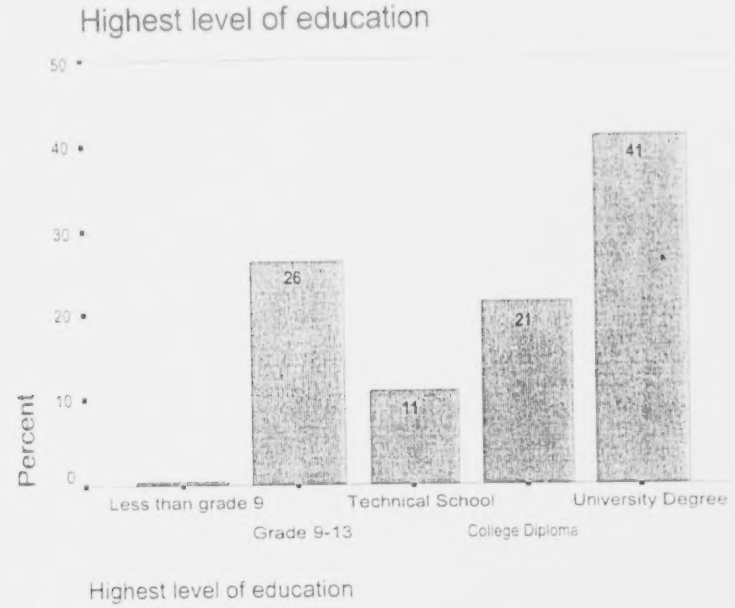


Figure 5: Sample Distribution by Education



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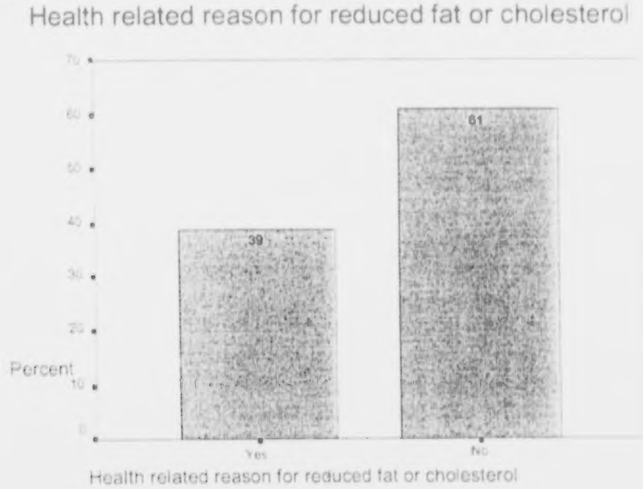
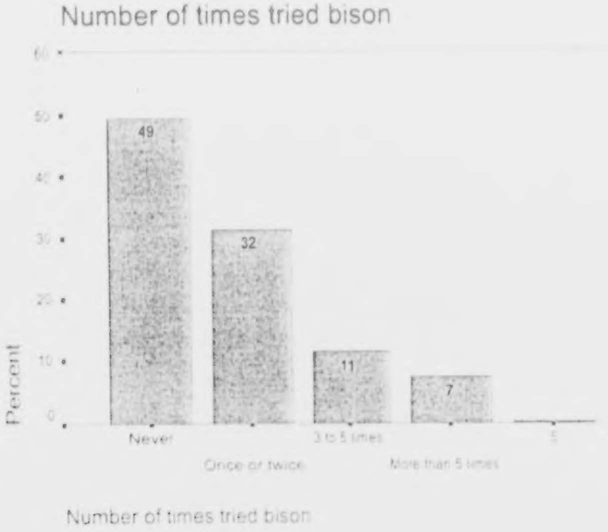


Figure 7: Sample Distribution by Number of Times Previously Tried Bison



4. INDIVDUAL PRODUCT EVALUATIONS

For the tasting panel all respondents were asked to first taste the sample and then complete a short questionnaire for each product. Respondents were asked to rate the following aspects of each product:

- overall acceptability,
- taste or flavour,
- juiciness
- tenderness

In each case, an 8-point scale was used, ranging from 1 "Extremely Acceptable" to 8 "Extremely Unacceptable".

Respondents were then asked to indicate where they would be most likely to purchase the product (grocery store, restaurant, fast food restaurant, deli/sandwich shop, concession stand, other location). They were asked to indicate the price they would be willing to pay for the product having been given the price of a similar beef product as a reference point. They were asked to comment on what they liked and did not like (or would change) about the product. After having tasted all four products, panelists were asked to rank them from 1 to 4 in order of preference. Finally, they were asked whether, after having tasted bison during the taste panel, they thought it was better, worse or about what they had expected and were given further opportunity to comment.

The summary below is presented product-by-product, with comparisons across the five locations. The data presented are average evaluation scores on the 8-point scale – note that this means that the **lower** the number, the more acceptable the product. A comparison of product rankings and statistical significance of the mean values is provided in a subsequent section.

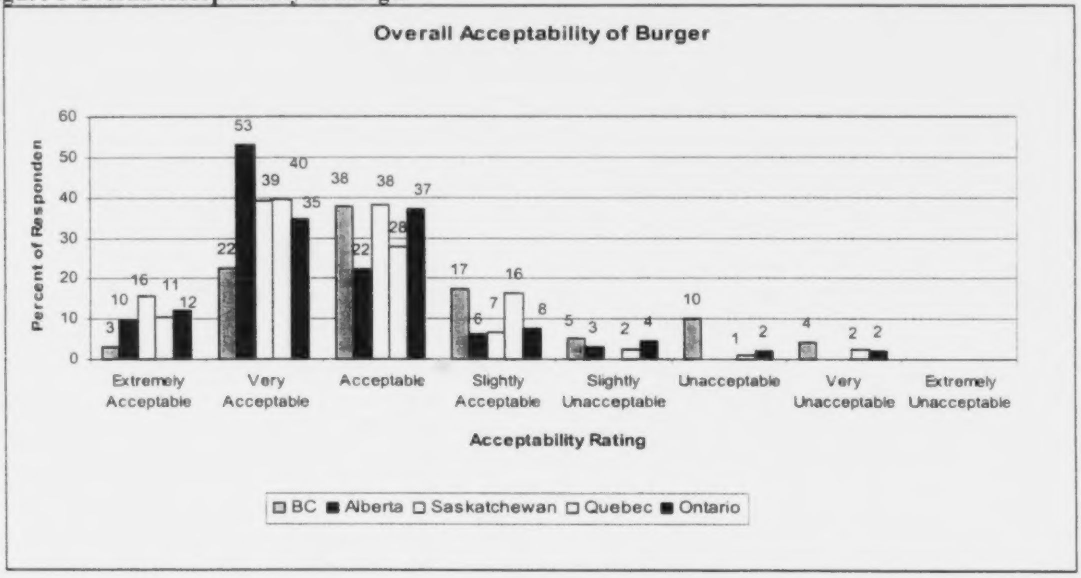
4.1 Bison Burger

The burger contained bison meat, water and salt, no filler was added. The burgers were cooked from frozen to an internal temperature of 71°C. Each panelist received ¼ of a burger to taste and evaluate.

Overall Acceptability - burger

The Burger had the highest "overall acceptability" ratings in Saskatchewan and Alberta, with approximately 63% and 55% respectively rating the burger as extremely or very acceptable (Figure 8). Approximately 50% of Québec respondents found the burger extremely or very acceptable, while 47% of Ontario respondents rated the burger as extremely or very acceptable overall. The burger was least liked in BC where only 25% of respondents rated the burger as extremely or very acceptable. Turning instead to the percentage of respondents who found the burger "unacceptable" (i.e. rated the product between slightly unacceptable to extremely unacceptable) we see that this was the case for 19% of respondents in BC, 9% in Ontario, 6% in Québec, 3% in Alberta and 0% for Saskatchewan.

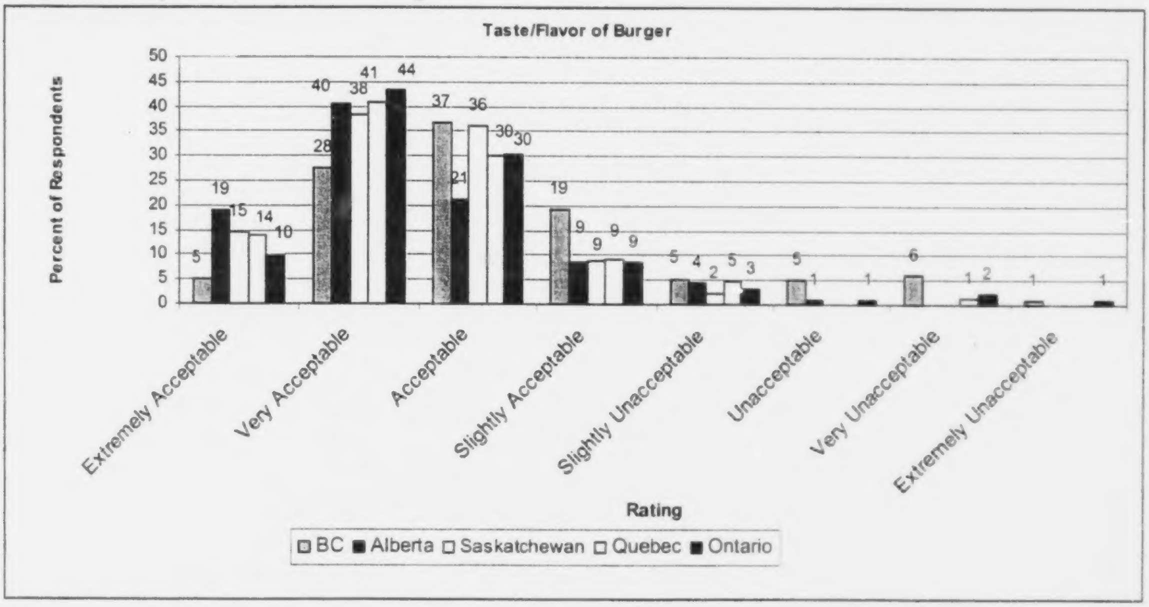
Figure 8 Overall Acceptability of Burger



Taste/ Flavour - burger

Alberta gave the burger the highest ratings for flavour-with 60% of respondents rating it as extremely or very acceptable. Québec, Ontario and Saskatchewan gave the burger similar ratings for flavour with 55%, 53%, and 53% respectively indicating extremely or very acceptable. BC again gave the burger the lowest flavour rating with 33% indicating the flavour was extremely or very acceptable. The taste of the burger was "unacceptable" to 17% of BC respondents, 8% of those in Ontario, 6% in Québec, 5% in Alberta and 2% in Saskatchewan.

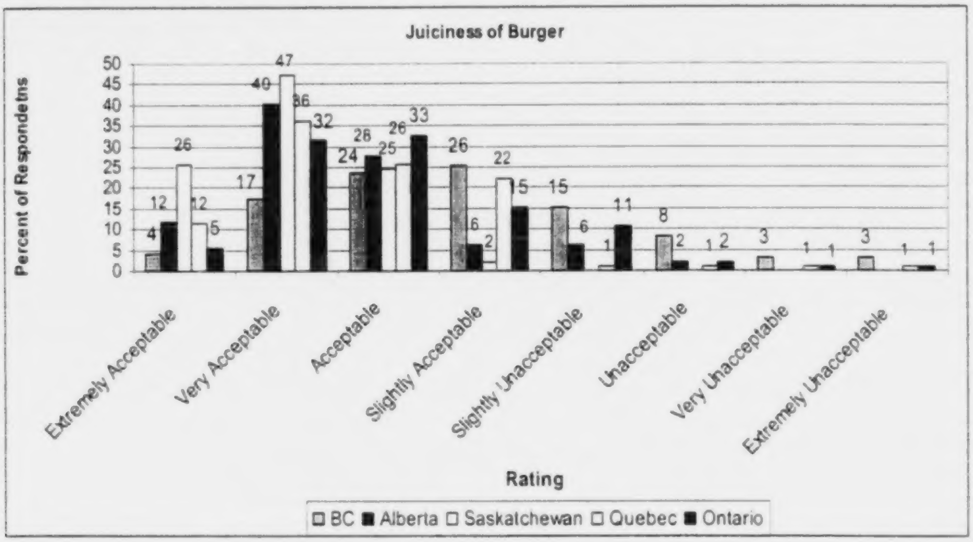
Figure 9: Burger Taste/Flavour Ratings



Juiciness - burger

Saskatchewan gave the burger the highest ratings for juiciness with 73% indicating extremely or very acceptable. Alberta followed at 52%, Québec at 48%, Ontario at 37% and BC the lowest at 21%. "Unacceptable" ratings for burger juiciness represented 30% of BC responses, 15% in Ontario, 9% in Alberta, 5% in Québec and 0% for Saskatchewan.

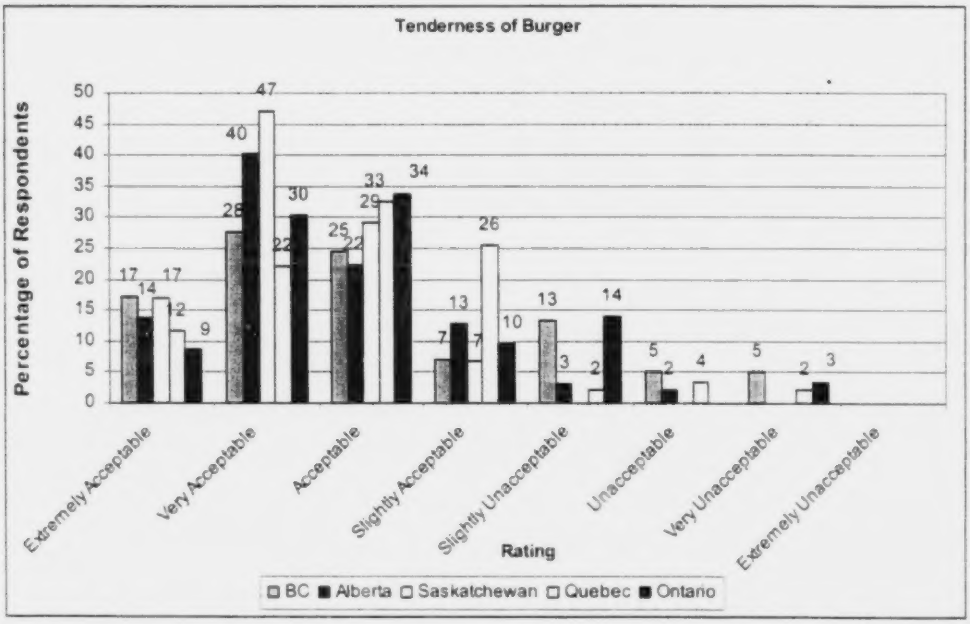
Figure 10: Burger Juiciness Ratings



Tenderness - burger

Saskatchewan gave the highest tenderness ratings to the burger with 64% of respondents indicating extremely or very acceptable. For Alberta it was 54%, BC 45%, Ontario 39% and Québec the lowest at 34%. Tenderness was considered to be "unacceptable" by 24% of BC respondents, 17% of those in Ontario, 8% in Québec, 5% in Alberta. None of the Saskatchewan respondents scored the burger in the "unacceptable" range.

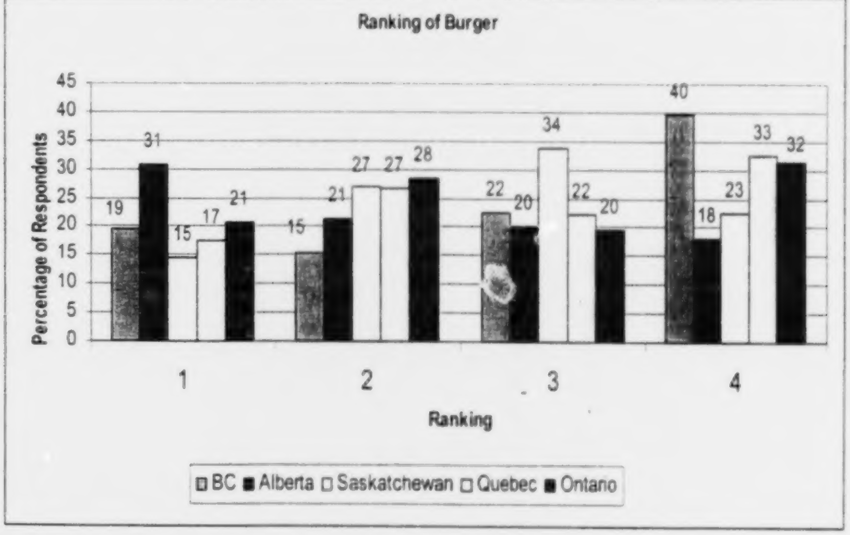
Figure 11: Burger Tenderness Ratings



Ranking - burger

Almost one third (31%) of Alberta respondents ranked the burger as their most preferred *of the four products tasted,* in Ontario it was 21%, BC 19%, Québec 17% and Saskatchewan 15%. Almost 40% of BC respondents ranked the burger last (4th), while 34% of Saskatchewan respondents ranked it third. The Figure below indicates the percentage of respondents at each location who ranked the burger 1st, 2nd, 3rd and 4th compared to the other three products.

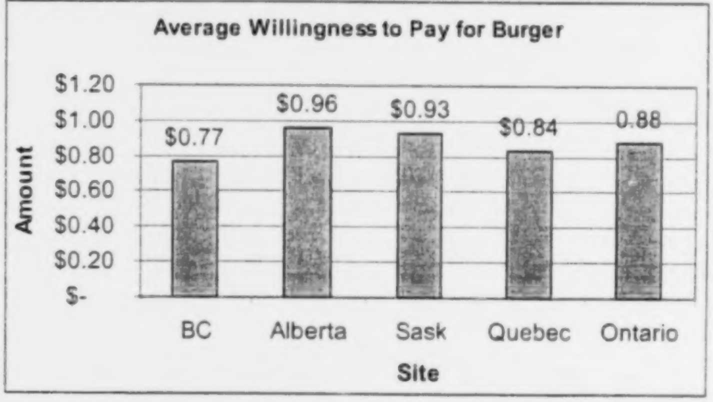
Figure 12: Burger Ranking



Willingness to Pay - burger

Respondents were told that the reference price for a comparable ¼ lb beef burger to cook at home was $0.75 and asked how much they would be willing to pay for the bison burger. Alberta had the highest average willingness to pay for the bison burger at $0.96, with Saskatchewan next at $0.93, Ontario averaging $0.88, Québec averaging $0.84, and BC the lowest at $0.77. However, there is a considerable distribution in the stated willingness-to-pay within each location, as discussed in section 6.

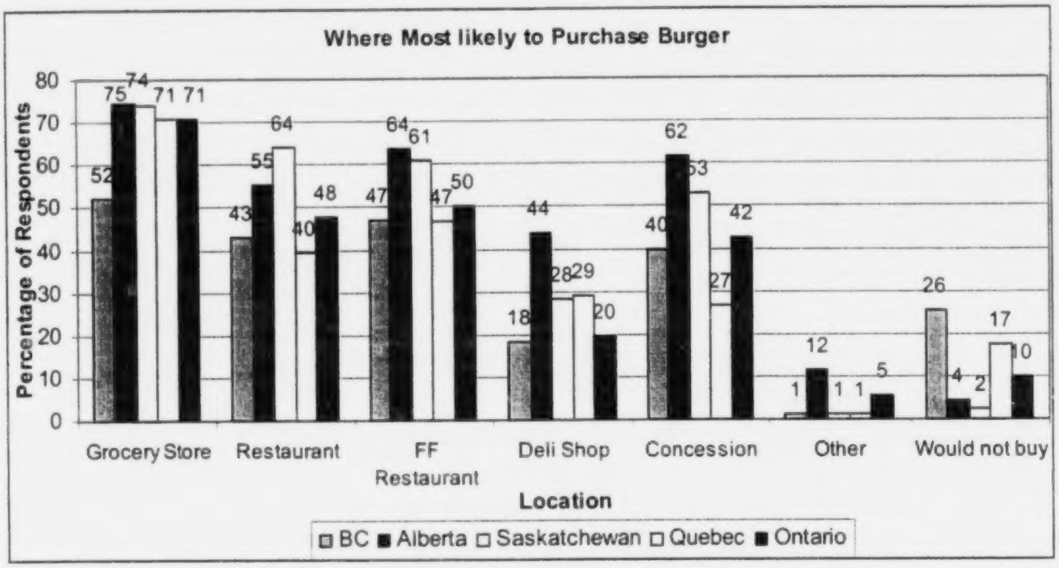
Figure 13: Average Willingness to Pay for Burger



Where Most Likely to Purchase the Burger

Figure 14 presents a comparison by location of where participants said they would be most likely to purchase the bison burger. Respondents were allowed to choose multiple locations. In general, a grocery store, a restaurant or a fast food restaurant were the most likely locations. A relatively high percentage (62%) of Alberta respondents indicated they would be most likely to purchase the burger at a concession stand. BC participants were less likely than those at all other sites to purchase the burger in a grocery store and had the highest percentage of respondents (26%) indicate they would not buy the burger. This is consistent with BC having the lowest overall acceptability rating for the burger. It is interesting to note the similarity in responses from Alberta and Saskatchewan respondents, while with the exception of the grocery store, BC, Québec and Ontario have relatively similar ratings for each location.

Figure 14: Where Most Likely to Purchase the Bison Burger



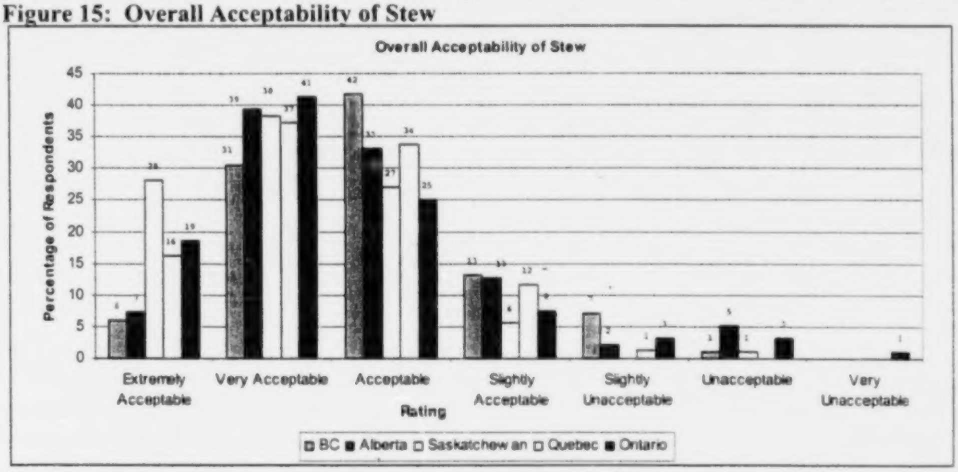
4.2 *Bison Stew*

The stew contained seasoned bison meat (bison, water, salt, sodium phosphate) from the top round cut, mushroom, potato, onion, tomato, carrot, turnip, parsnip, celery, garlic, canola oil, beef bullion, flour, corn starch and seasoning. The stew was fully cooked and frozen in 1 kg bags. It was reheated from frozen in boiling water before serving.

Overall Acceptability - Stew

Saskatchewan gave the stew the highest overall acceptability ratings with 66% of respondents rating it as extremely or very acceptable, compared with 60% in Ontario, 54% in Québec, 47% in Alberta and BC coming in lowest with only 37% rating the stew as extremely or very acceptable (Figure 15). The stew received "unacceptable" ratings (rating between slightly unacceptable and extremely unacceptable) by 8% of BC respondents, 7% of respondents in both Alberta and Ontario, and by 1% of respondents in Québec and Saskatchewan. Note, however, that some problems were encountered with the stew prepared for the Alberta panels, so caution should be used in comparing Alberta stew evaluations to those of the other locations.

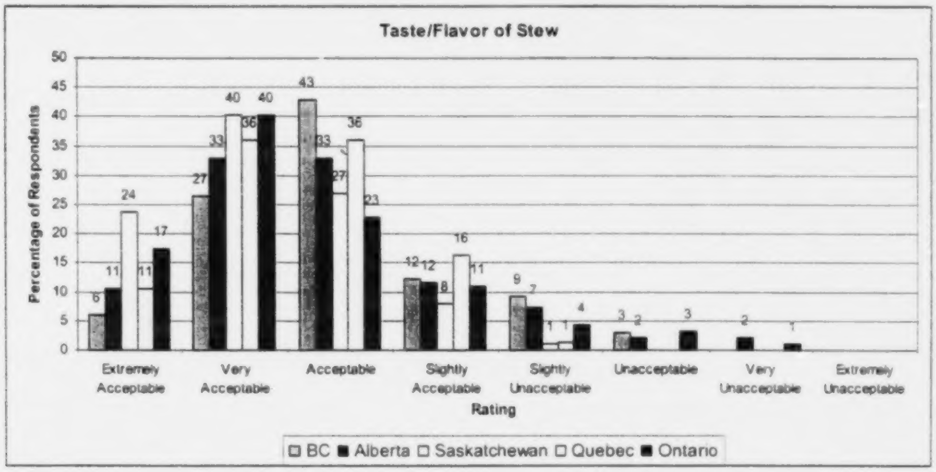
Figure 15: Overall Acceptability of Stew



Taste/Flavour - Stew

Saskatchewan gave the highest rating for stew taste/flavour with 64% of respondents rating it as extremely or very acceptable. Ontario respondents had the second highest ratings with 58% indicating the stew was extremely or very acceptable. For Québec, Alberta and BC the ratings were 47%, 44% and 33% respectively. Taste was considered "unacceptable" by 12% of respondents in BC and Alberta, 9% of respondents in Ontario, and 1% of respondents in both Québec and Saskatchewan.

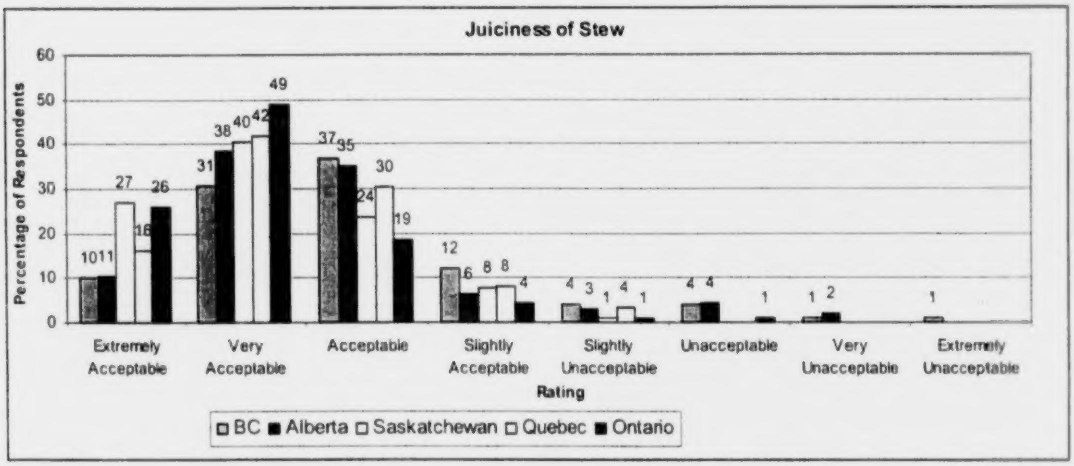
Figure 16: Stew Taste/Flavour Ratings



Juiciness - Stew

The highest ratings for stew juiciness came from Ontario with 75% of respondents indicating the stew was extremely or very juicy. An estimated 67% of Saskatchewan respondents gave it a similar rating while in Québec it was 58%, Alberta 49% and in BC 41%. The juiciness received "unacceptable" ratings by 10% of respondents in both BC and Alberta, 4% of Québec respondents, 2% in Ontario and 1% in Saskatchewan.

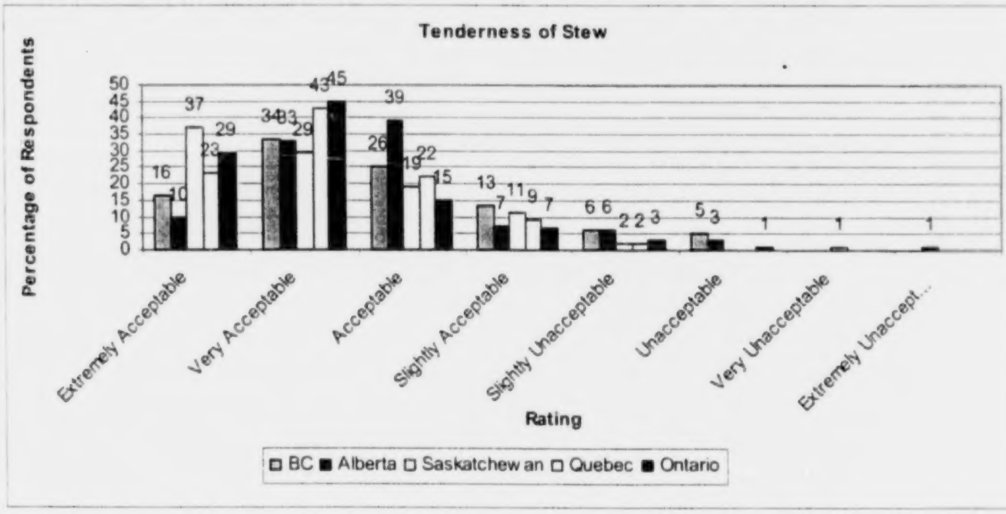
Figure 17: Stew Juiciness Ratings



Tenderness - Stew

The highest tenderness ratings for the stew were given by Ontario respondents, with 74% rating it as extremely or very acceptable; in both Saskatchewan and Québec 66% of participants gave similar ratings. Approximately 50% of BC respondents and 43% of Alberta respondents gave the tenderness of the stew a rating of extremely or very acceptable. BC and Alberta had the highest percentage of "unacceptable" ratings at 11%, with Ontario at 4%, Saskatchewan at 3% and Québec at 2%.

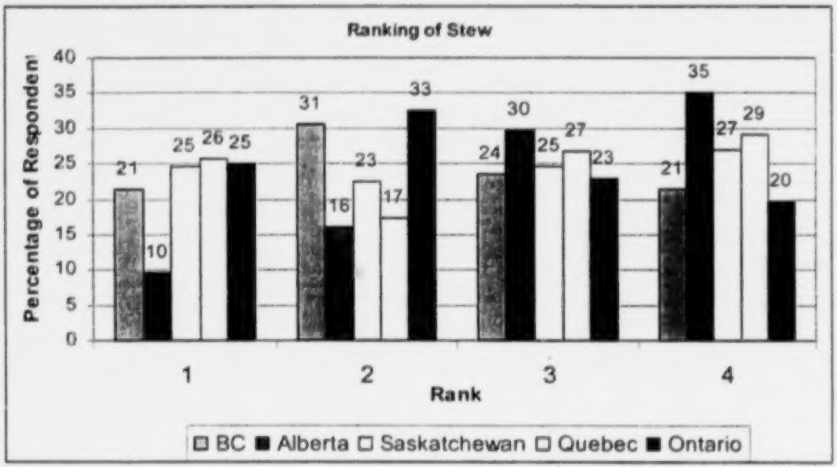
Figure 18: Stew Tenderness Ratings



Ranking - Stew

With the exception of Alberta approximately 25% of respondents at all locations ranked stew as the most preferred *of the four products tasted.* Alberta had the highest percentage of respondents (35%) ranking the stew fourth, possibly reflecting the problems with the stew used at this site.

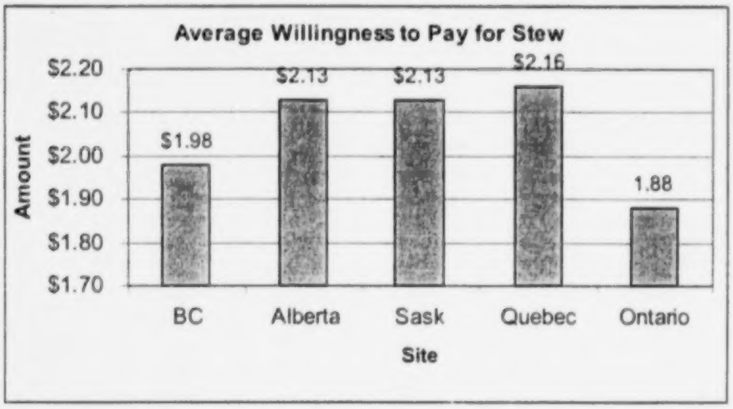
Figure 19: Ranking of Stew



Willingness to Pay - Stew

The reference price for a comparable beef stew product was $2.00 for a ½ lb serving. Relative to this the highest average willingness to pay for the stew was in Québec at $2.16, with both Alberta and Saskatchewan having similar values at $2.13. BC and Ontario both had average values below the comparable beef price at $1.98 and $1.88 respectively.

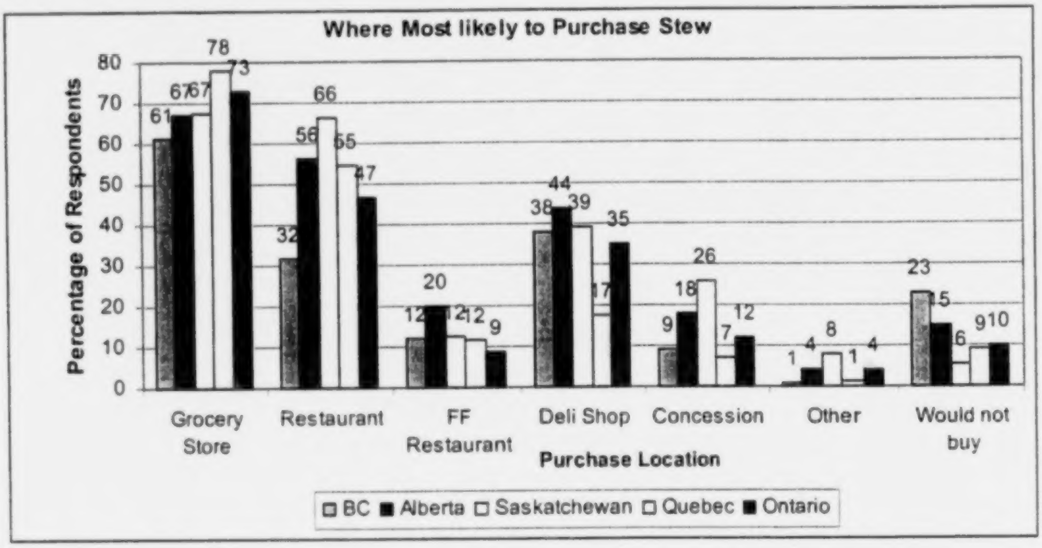
Figure 20: Average Willingness to Pay for Stew



Where Most Likely to Purchase Stew

Figure 21 compares by site where respondents would be most likely purchase the stew. Grocery stores or restaurants were the most popular choices. Respondents in Québec had the highest percentage (78%) and BC the lowest percentage (61%) indicating they would buy the stew in a grocery store. Saskatchewan had the highest percentage of respondents who would be likely to purchase the stew in a restaurant (66%) while BC had the lowest percentage (32%) indicating a restaurant. BC had the highest number of respondents indicating they would not purchase the stew (23%), followed by Alberta at 15%, Ontario at 10%, Québec at 9% and Saskatchewan at 6%.

Figure 21: Where Most Likely to Purchase the Stew



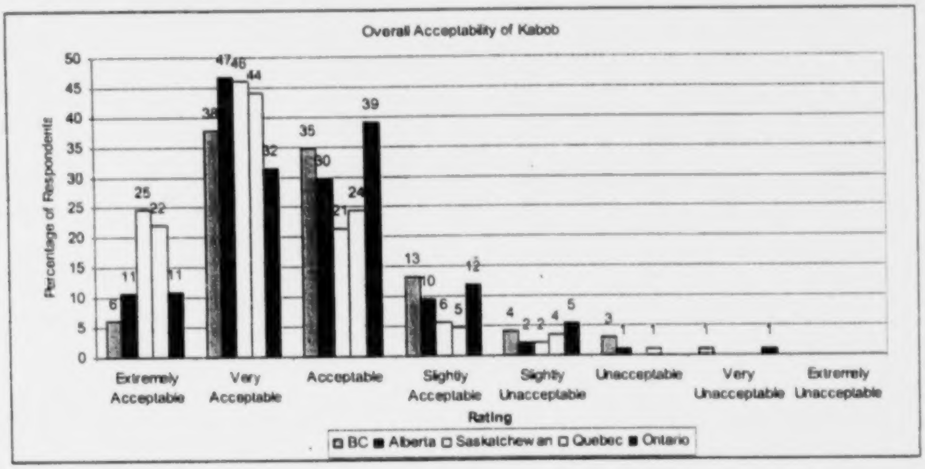
4.3 Bison Kabob

The kabob was produced from bison top round and contained water, salt and sodium phosphate. Cubes approximately 2 cm X 2cm were cut, seasoned and skewered raw and then frozen. They were cooked from frozen to an internal temperature of 71°C. Each panelist received three pieces of kabob meat on a skewer.

Overall Acceptability - Kabob

A comparison of the overall acceptability of the kabob reveals that Saskatchewan gave this product the highest rating with 71% of the respondents indicating it was extremely or very acceptable. This same rating was given by 66% of Québec participants, 57% of Albertans, 44% and 42% of respondents in BC and Ontario respectively. For the kabob the highest percentage of "unacceptable" ratings came from BC at 8%, followed by Ontario at 7%, Québec at 5%, Alberta at 3% and Saskatchewan at 2%.

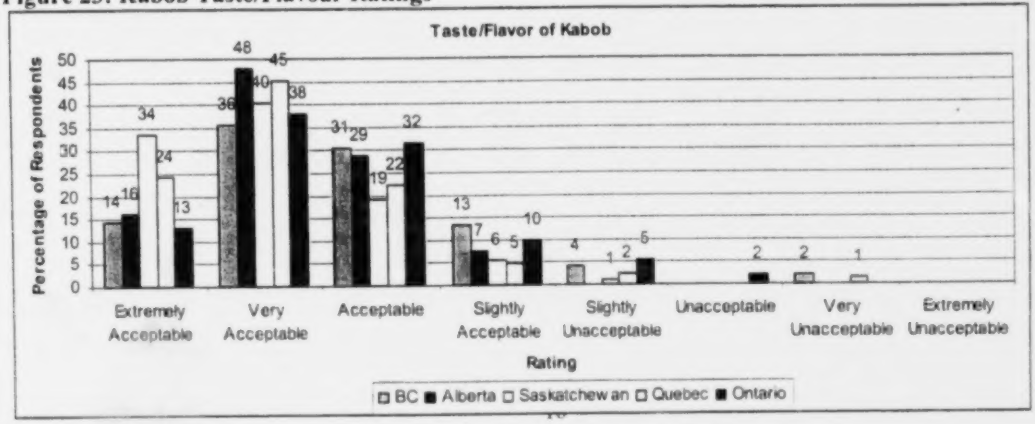
Figure 22: Overall Acceptability of Kabob



Taste/Flavour - Kabob

The kabob received high ratings in both Saskatchewan and Québec with 74% and 70% of respondents rating the taste/flavour as extremely or very acceptable respectively. In Alberta 64% of respondents gave the kabob this rating for flavour while 50% of respondents in both BC and Ontario rated the kabob flavour as extremely acceptable or very acceptable. Taste was "unacceptable" to 8% of Ontario respondents, 6% of those from BC, 4% in Québec and 1% in Saskatchewan.

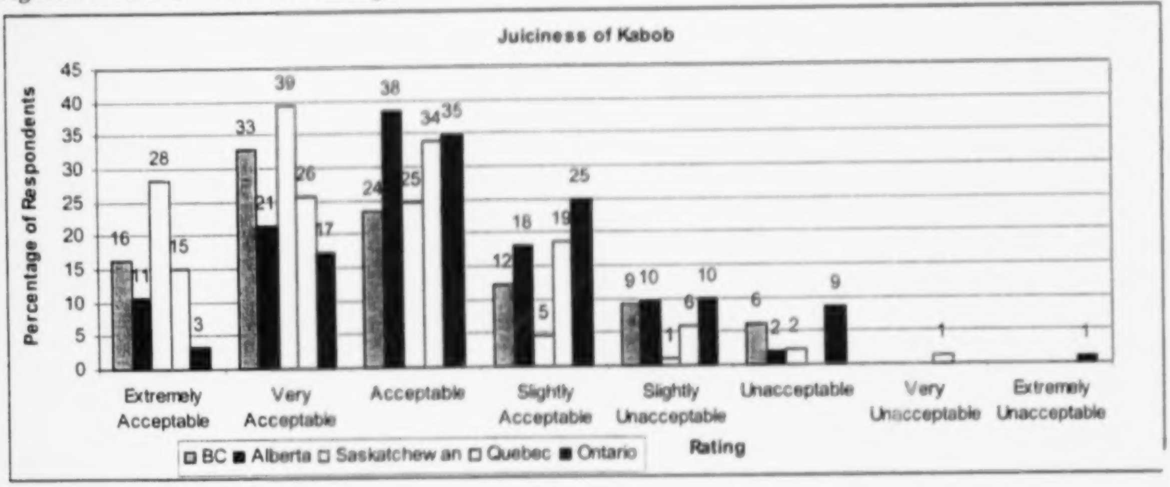
Figure 23: Kabob Taste/Flavour Ratings



Juiciness - Kabob

In general the ratings for juiciness were somewhat lower than for taste. Saskatchewan again gave the highest ratings with 67% indicating the juiciness of the kabob was extremely acceptable or very acceptable. The next highest ratings came from BC (49%) followed by Québec (41%), Alberta (32%) and Ontario (21%). A total of 20% of respondents from Ontario found the juiciness of the kabob "unacceptable", 15% from BC, 12% from Alberta, 7% from Québec and 3% from Saskatchewan.

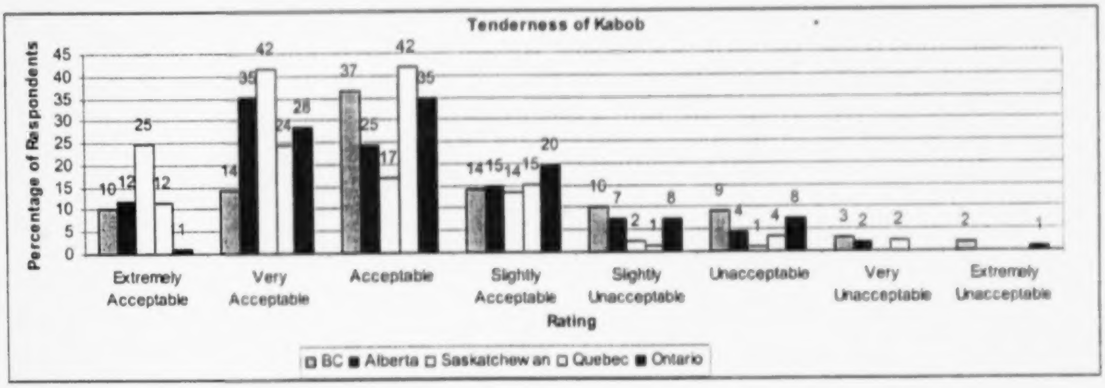
Figure 24: Kabob – Juiciness Ratings



Tenderness - Kabob

The kabob received lower ratings for tenderness compared to flavour and overall acceptability. Saskatchewan had the highest tenderness ratings with 66% of respondents indicating it was extremely or very acceptable. The percentage of respondents giving the kabob tenderness ratings of extremely or very acceptable in Alberta was 47%, Québec 36%, Ontario 29% and BC 25%. Tenderness was considered "unacceptable" by 25% of those from BC, 16% in Ontario, 14% in Alberta, 7% in Québec and 3% in Saskatchewan.

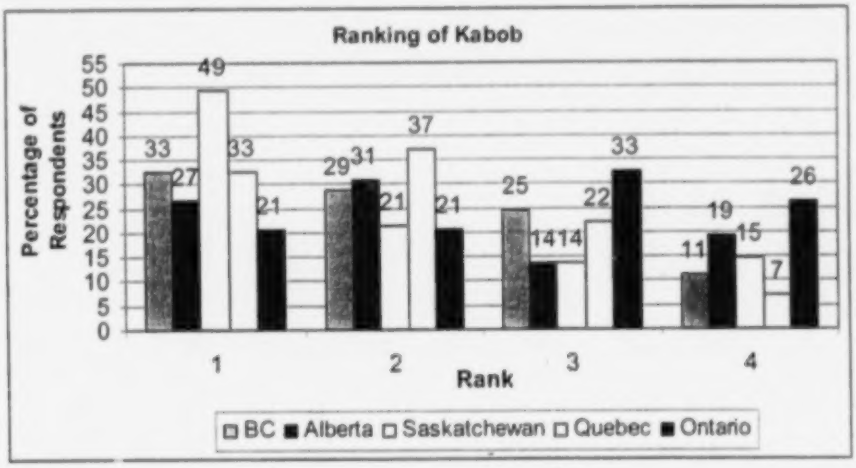
Figure 25: Kabob – Tenderness Ratings



Ranking -Kabob

The kabob was ranked number one relative to the three other bison products tasted by almost 50% of the Saskatchewan respondents, by 33% of respondents in both BC and Québec, 27% of Alberta respondents and 21% of participants in Ontario.

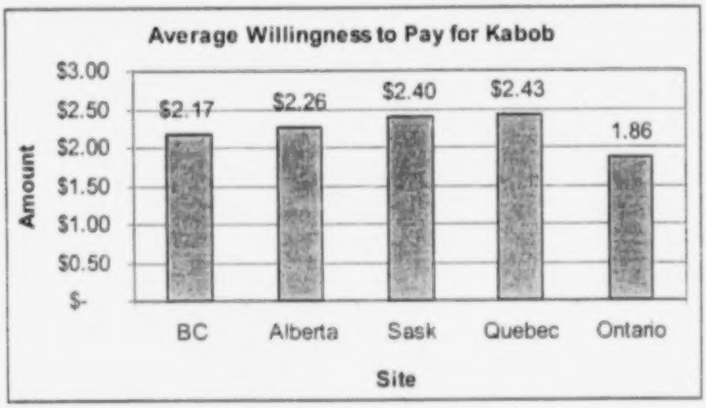
Figure 26: Ranking of Kabob



Willingness to Pay - Kabob

The reference beef price was $2.00 for a ¼ lb serving. The highest stated average willingness to pay for the bison kabob was in Québec ($2.43), with Saskatchewan very close at $2.40. Alberta was the next highest at $2.26 followed by BC at $2.17 and Ontario at $1.86.

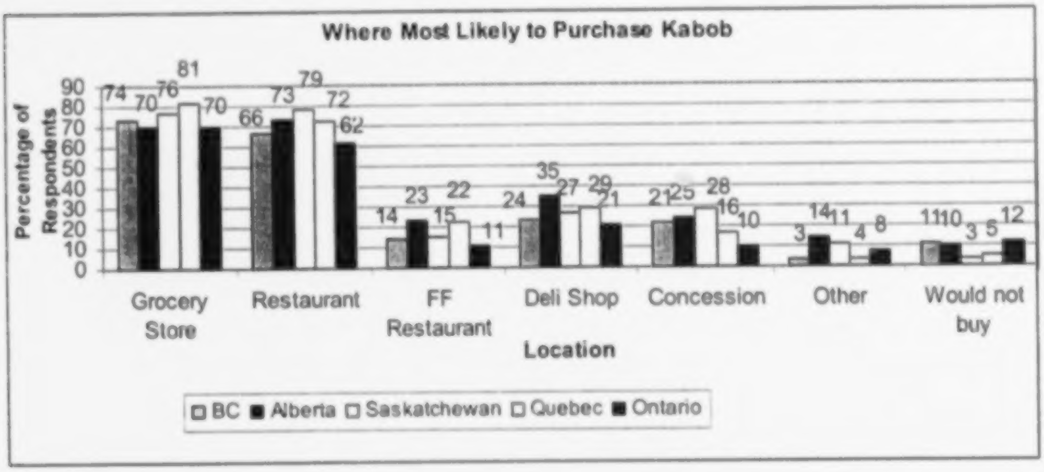
Figure 27: Average Willingness to Pay for the Kabob



Where Most Likely to Purchase Kabob

Respondents most frequently indicated they would buy the kabobs in a grocery store or a restaurant. The percentages of respondents providing these answers were high for all five sites. Some respondents indicated they would be most likely to purchase the kabob in a deli shop, concession or fast food restaurant but these percentages were substantially smaller. The highest percentages of respondents who indicated they would not buy the product came from Ontario, BC and Alberta with 12%, 11% and 10% respectively.

Figure 28: Where Most Likely to Purchase the Kabob



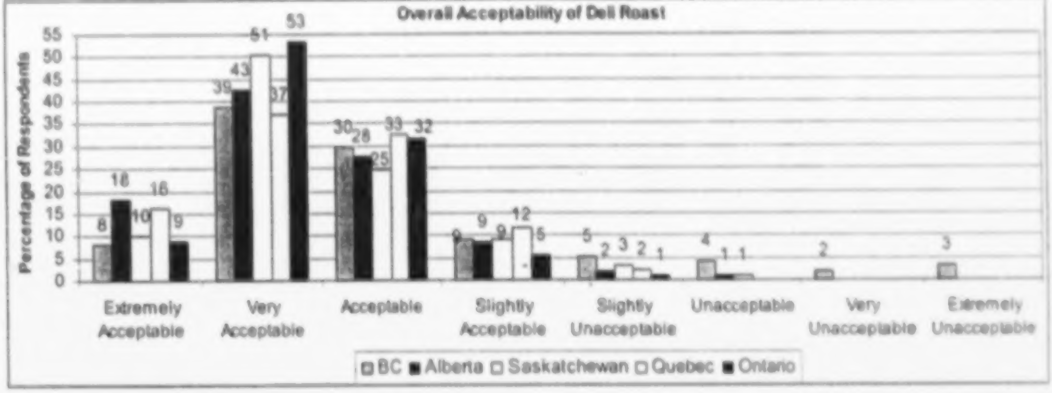
4.4 *Deli Roast*

The deli bison roast was produced from top round roast. It was marinated using water, salt, sodium phosphate to 10% above green weight (i.e. every 100kg results in 110 kg of marinated product). The product was fully cooked and vacuum packed whole. It was sliced thinly before serving.

Overall Acceptability – Deli Roast

Almost two-thirds of respondents in Ontario (62%), Alberta (61%), and Saskatchewan (61%) rated the deli roast as overall extremely or very acceptable. Approximately half of the respondents in Québec (54%) and BC (46%) gave the deli roast these high ratings. Overall the deli roast was "unacceptable" (rated between slightly unacceptable and extremely unacceptable) by 14% in BC, 5% in Saskatchewan, 3% in Alberta, 2% in Québec and 1% in Ontario.

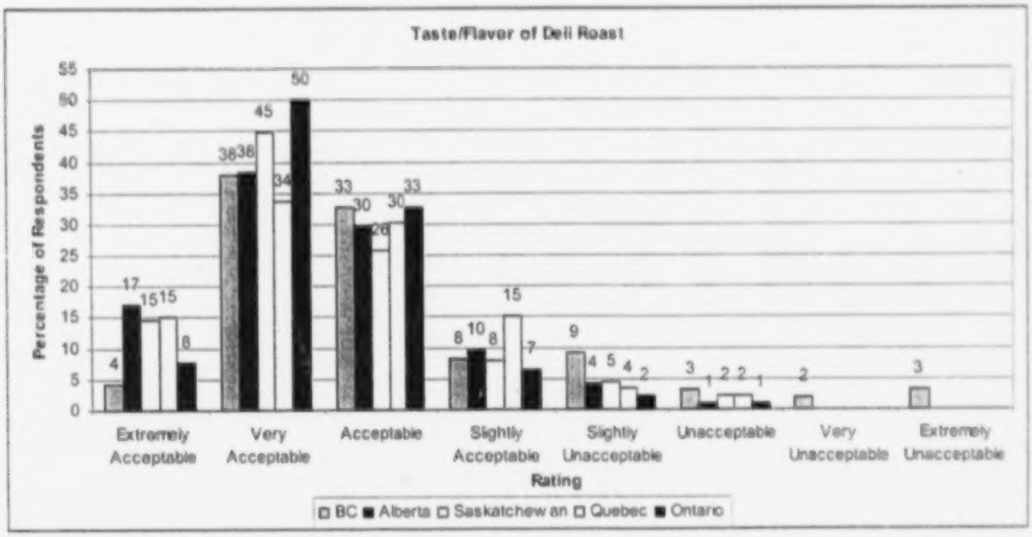
Figure 29: Overall Acceptability of Deli Roast



Taste/Flavour – Deli Roast

Saskatchewan (60%), Ontario (58%) and Alberta (55%) had the highest ratings for taste, with respondents indicating the deli roast was extremely or very acceptable. For Québec the number was 49% and BC 42%. Taste was "unacceptable" to 17% of BC respondents, 7% of those from Saskatchewan, 6% from Québec, 5% from Alberta and 3% from Ontario.

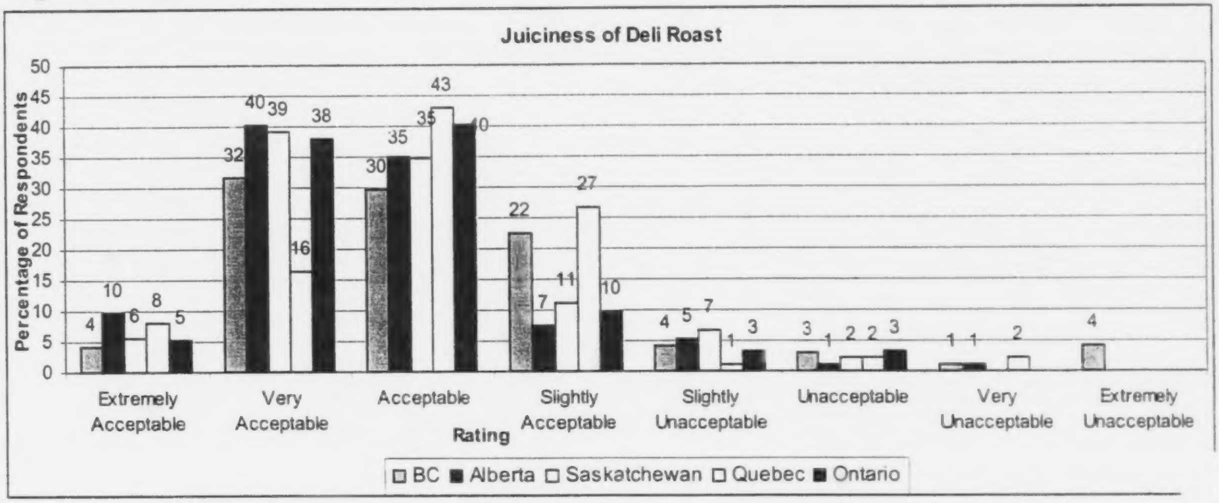
Figure 30: Deli Roast Taste/Flavour Ratings



Juiciness – Deli Roast

Alberta respondents gave the highest ratings for juiciness, with 50% describing it as extremely or very juicy. Saskatchewan was the next highest at 45%, Ontario at 43%, BC at 36% and Québec at 24%. The juiciness of the deli roast was rated as "unacceptable" by 12% in BC, 9% in Saskatchewan, 8% in Alberta, 7% in Ontario and 6% in Québec.

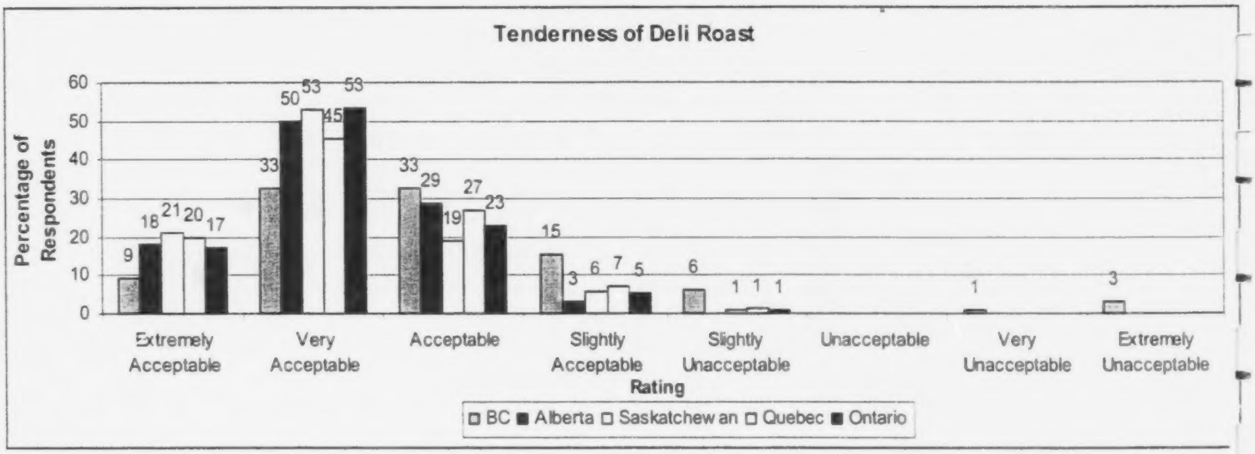
Figure 31: Deli Roast Juiciness Ratings



Tenderness – Deli Roast

Tenderness ratings were somewhat higher than those for juiciness for all sites. Saskatchewan had the highest percentage reporting the tenderness as extremely or very acceptable at 74%, followed by Ontario at 71%, Alberta at 68%, Québec at 65% and BC the lowest at 42%. Tenderness was "unacceptable" for 10% of BC respondents and 1% of those from Saskatchewan, Québec and Ontario.

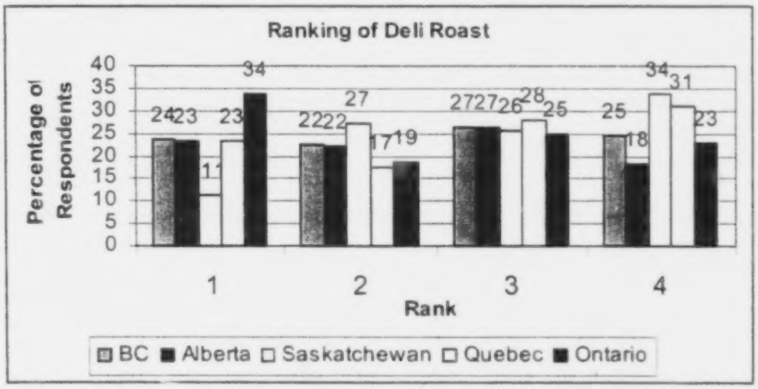
Figure 32: Deli Roast Tenderness Ratings



Ranking – Deli Roast

Ontario most frequently (34%) ranked the deli roast as the most preferred of the four products. BC, Alberta, and Québec ranking it number one approximately 25% of the time. Only 11% of Saskatchewan respondents ranked it number one.

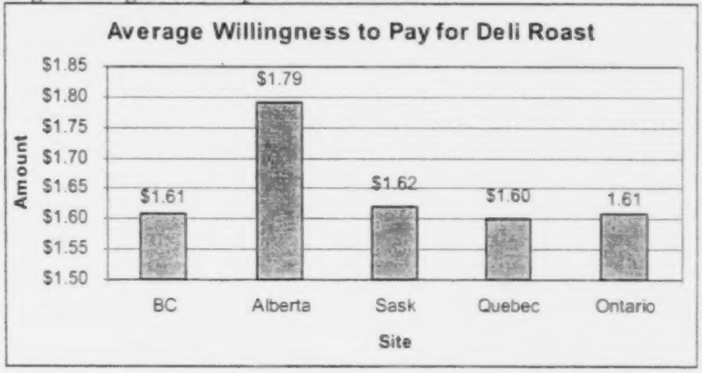
Figure 33: Ranking of Deli Roast



Willingness to Pay – Deli Roast

With the exception of Alberta at $1.79, average willingness to pay was quite similar at all sites and very close to the comparable beef product price of $1.60.

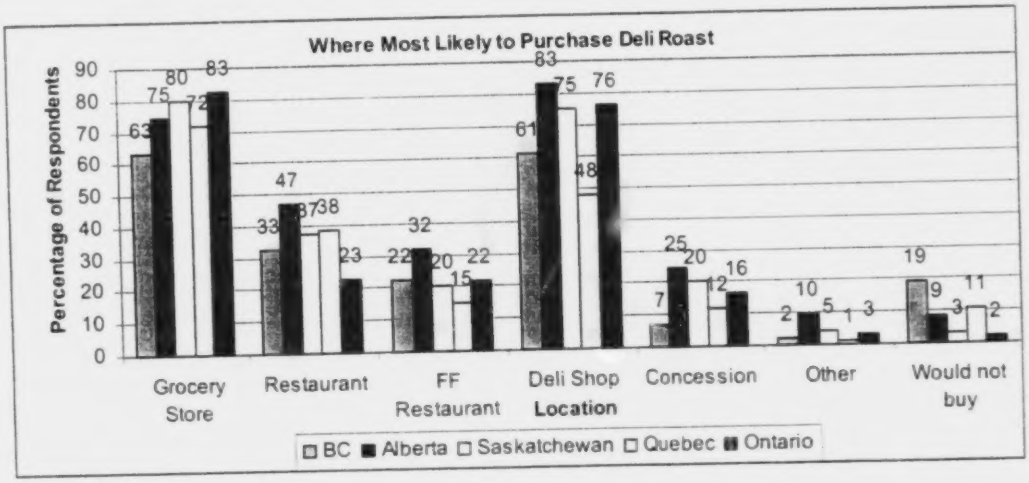
Figure 34: Average Willingness to Pay for Deli Roast



Where Most Likely to Purchase Deli Roast

The two most frequently chosen likely locations for purchasing the deli roast were the grocery store and deli or sandwich shop regardless of site. There was a high percentage (19%) of BC respondents who indicated they would not buy the product. In Québec that number was 11% and in Alberta it was 9%. Saskatchewan and Ontario were lower at 3% and 2% respectively.

Figure 35: Where Most Likely to Purchase Deli Roast



5. WITHIN-SITE PRODUCT COMPARISONS OF OVERALL ACCEPTABILITY

It is useful to compare the 'overall acceptability' ratings of the products within each site to see whether we can identify clear 'winners' (or losers) among the products at each location. Comparison of the average (mean) overall acceptability rating of the four products by respondents at each location is provided in the table below, along with the standard deviation of each average. Note that a large standard deviation relative to the average indicates wide variations in the rating of the product by respondents. It suggests a lack of consensus on the overall acceptability of the products. The results indicate a considerable disparity in the overall acceptability of the products. Remember also that the acceptability rating ranges from 1 (extremely acceptable) to 8 (extremely unacceptable), so that a **lower** number indicates that a product was more acceptable on average.

Table 1: Comparison of Mean Scores for Overall Acceptability Within Each Location

Overall Acceptable	**BC** *(1)*		**Alberta** *(2)*		**Sask** *(3)*		**Quebec** *(4)*		**Ontario**	
Mean	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev
Burger	3.46^{**}	1.45	2.37	0.88	2.36	0.83	2.73	1.22	2.73	1.25
Stew	2.88	1.03	2.82^{**}	1.17	2.15	0.97	2.44	0.94	2.5	1.26
Kabob	2.85	1.16	2.51	0.94	2.15	0.94	2.27^{**}	1.05	2.74	1.1
Deli Roast	3.00	1.58	2.35	1.01	2.48^{**}	0.99	2.47	0.98	2.37	0.77

BC

In BC all four products had an average overall acceptability rating close to "acceptable" (3) with the average overall acceptability rating of the burger being the lowest at 3.46 and statistically different from the average of all three other products using a 99% confidence interval (see Table 1)[1]. This tells us that there was a statistically significant lower average overall acceptability rating of the burger relative to the other products – in other words, the burger was a clear "loser" in BC. There is no clear 'winner' among the four products in BC.

Alberta

In Alberta, the average overall acceptability rating of all four products was relatively similar, between "very acceptable" (2) and "acceptable" (3). The stew was the least acceptable product and was statistically different from the average of the kabob at the 95% confidence interval and different from the burger and the deli roast at the 99% confidence interval. Caution should be used in interpreting this result, given the quality problems encountered with the stew prepared for the Alberta panels. There is no clear winner among the four products.

Saskatchewan

In Saskatchewan all products had similar average overall acceptability ratings, falling between "very acceptable" (2) and "acceptable" (3). The deli roast had the lowest average rating of the four products and is statistically different from the average of the stew at the 95% confidence interval and different from the kabob at the 99% confidence interval. Thus, the deli roast appears to be the 'loser' of the four products in Saskatchewan.

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[1] The (**) indicates that the average was statistically different from that of another product for the particular location at the 99% confidence interval and the (*) indicates statistically different at the 95% confidence interval

Québec

In Québec the average overall acceptability rating of the kabob was statistically different (higher) than the burger at the 99% confidence interval, indicating that the kabob was preferred over the burger. There was no statistical difference between the average kabob rating and the average rating of the stew or the deli roast.

Ontario

In Ontario, there was no statistically significant differences in the mean overall acceptability ratings of the four products. In other words, it is not possible to identify a clear 'winner' or 'loser' from the Ontario data.

Saskatchewan respondents gave the burger, stew and kabob the highest average overall acceptability rating of the 5 sites tested. In Alberta the overall acceptability rating of the burger was almost identical to that of Saskatchewan. Alberta gave the highest average overall acceptability rating for the deli roast with the rating by Ontario being quite similar.

Within-Site Comparison of Product Rankings

It is also useful to compare the product ranking data within each site. Recall that after having completed the taste test, respondents were asked to rank the products tasted from 1 to 4 in terms of most to least preferred. The table below presents the average product rankings, with **lower numbers** indicating a higher ranked position on average for that product. Rankings that have statistically different means *within a location* are indicated with **. In BC, the kabob on average received the highest ranking, and the burger the lowest[2]. In Alberta, the stew received on average the lowest ranking but note earlier cautions. In Saskatchewan and Québec, the kabob received the highest ranking on average. In Ontario there is no statistically significant difference between the means, therefore it is not possible to say which product was most/least preferred on average.

Table 2: Comparison of Mean Product Ranking Within Each Location

Ranking of Products	**BC** *(1)*		**Alberta** *(2)*		**Sask** *(3)*		**Quebec** *(4)*		**Ontario**	
Mean	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev
Burger	2.85**	1.17	2.28	1.14	2.66	1.00	2.71	1.11	2.64	1.09
Stew	2.46	1.07	3.00**	1	2.55	1.14	2.6	1.17	2.37	1.17
Kabob	2.15**	1.02	2.28	1.11	1.93**	1.11	2.04**	0.92	2.62	1.14
Deli Roast	2.54	1.12	2.44	1.09	2.84	1.03	2.66	1.15	2.37	1.07

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[2] In BC the average burger ranking was statistically different from the kabob ranking (99% confidence) and stew (95% confidence) but was not statistically different from the deli meat ranking. The kabob ranking was statistically different from the deli meat (95%) but not the stew.

6. COMPARING WILLINGNESS TO PAY ACROSS SITES

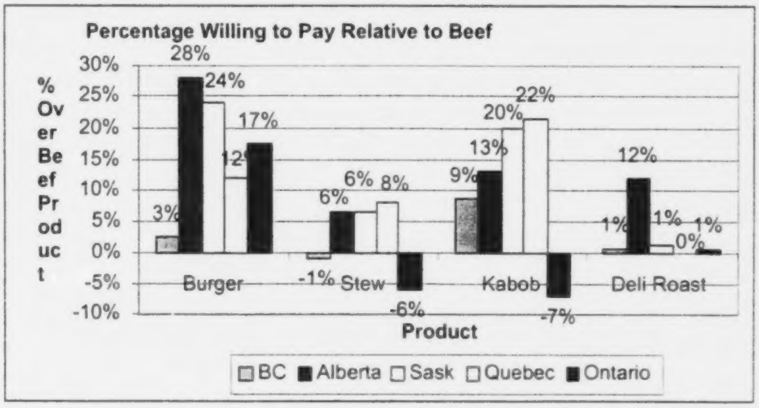
Table 3 summarizes the mean and standard deviation values for the stated willingness-to-pay (WTP) for each product at each site. Note that the variance in the willingness to pay is highest for BC, indicating a wider variety of opinions among BC respondents.

Table 3: Comparing Willingness to Pay

Willingness to Pay*	Reference	BC (2)		Alberta		Sask (1)		Quebec		Ontario	
Mean	Price Beef	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev
Burger	$0.75 /4 oz patty	$ 0.77	1.07	$ 0.96	0.44	$ 0.93	0.4	$ 0.84	0.44	$ 0.88	0.43
Stew	$2.00 /8 oz. serving	$ 1.98	2.06	$ 2.13	0.91	$ 2.13	0.75	$ 2.16	0.84	$ 1.88	0.66
Kabob	$2.00 /4 oz. meat	$ 2.17	2.17	$ 2.26	0.89	$ 2.40	0.75	$ 2.43	1.04	$ 1.86	0.58
Deli Roast	$1.6 /4 oz. meat	$ 1.61	2.02	$ 1.79	0.65	$ 1.62	0.61	$ 1.60	0.66	$ 1.61	0.37

Figure 36 presents the same mean WTP information in terms of the percentage difference ("premium" or "discount") that respondents in each location said they would be willing to pay relative to the reference price of a comparable beef product. Using the average stated willingness to pay, the largest premiums over the comparable beef prices are for the burger and kabob. Alberta and Saskatchewan are the highest for the burger at 28% and 24% respectively. For the kabob, Québec respondents said they would pay the highest premium at 22% followed closely by Saskatchewan at 20%. For Ontario the highest stated premium is for the burger at 17%, while for all other products the value is very low or negative. Consistent with the generally negative response of BC to the products, the average premiums on all products are quite low, the highest being the kabob at 9% followed by 3% for the burger. These results provide some interesting first impressions of willingness-to-pay, further analysis of this issue will be made with the laboratory market data.

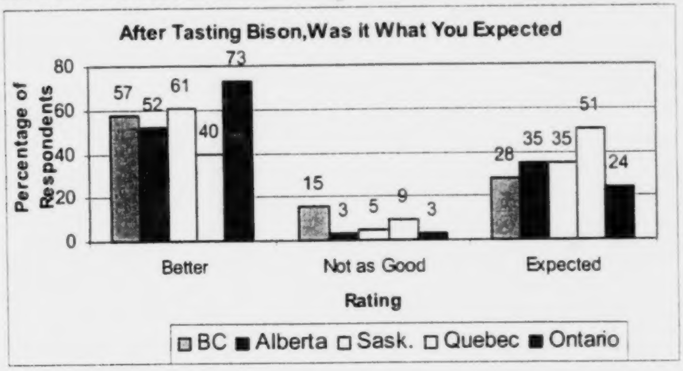
Figure 36: Stated Willingness to Pay as a Percentage of Beef Reference Price



7. EXPERIENCE Vs EXPECTATIONS

Responses to the question "***After Tasting Bison Today, I thought it was Better Than I Expected, Not as Good As I Expected, or About What I Expected***" are presented in Figure 37. With the exception of Québec, the majority of respondents indicated that bison was better than expected. In Ontario this response was given by 73%. Only 40% of those from Québec said it was better than expected, while half (51%) said it was what they would have expected. The responses for Saskatchewan and Alberta were quite similar, while BC had the highest percentage (15%) indicating the bison was not as good as expected.

Figure 37: Attitudes Towards Bison After Tasting



8. FACTORS INFLUENCING PURCHASING DECISIONS

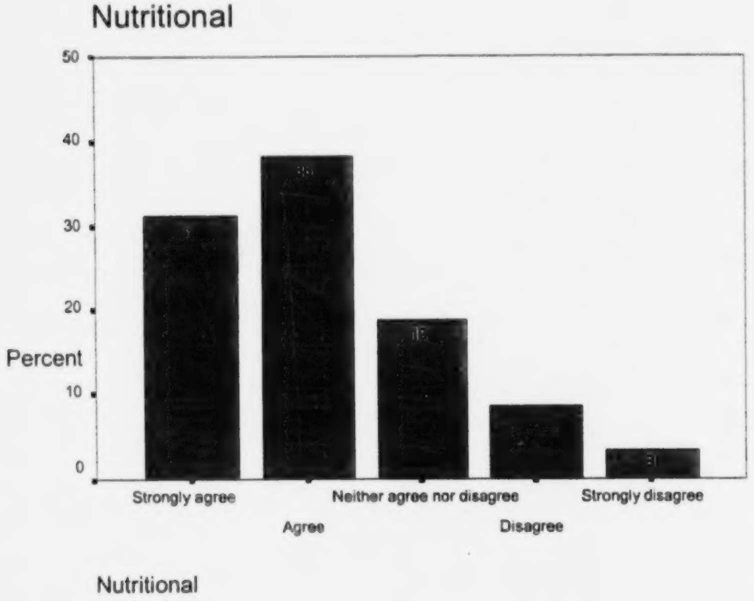
After completing the taste panel, respondents filled in an individual written survey that gathered additional information on their food purchasing habits and attitudes.

Respondents were asked to indicate to what extent they agreed or disagreed with a series of statements about the influence of specific factors on their purchasing decisions on a 5-point scale ranging from strongly agree (1) to strongly disagree (5). These provide us with a broad picture of the factors affecting meat purchase decisions. The following is a brief summary of the consolidated responses to these statements.

8.1 *Nutritional Content*

Respondents were presented with a statement that nutritional content was important to them when purchasing a meat product and asked to agree or disagree. Figure 38 suggests that nutritional content is relatively important when purchasing a meat product, with almost 70 % of respondents either agreeing or strongly agreeing with this statement. Given the anticipated nutritional advantages of bison relative to other meats these results suggest a potential advantage for the bison industry in promoting these attributes if these benefits can be demonstrated scientifically and communicated credibly to consumers.

Figure 38: Importance of Nutritional Content



8.2 *Available at Grocery Store*

The effect of product availability at a grocery store on the likelihood to purchase for home consumption was assessed. Respondents were asked to agree or disagree with the statement that when buying a meat product to cook at home they are more likely to buy it if it is available where they regularly buy groceries. As expected, availability seems to be an important determinant of the likelihood to purchase a meat product, with almost 90% of respondents agreeing or strongly agreeing with this statement. This has important implications for the distribution of new bison meat products and should be considered in any marketing strategies adopted by the industry.

Figure 39: Importance of Availability

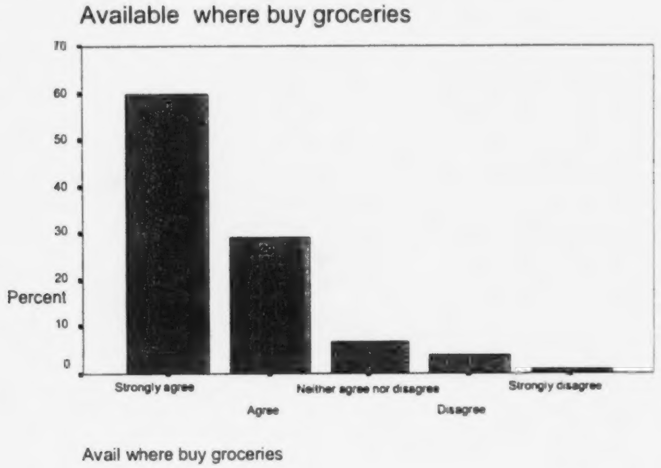
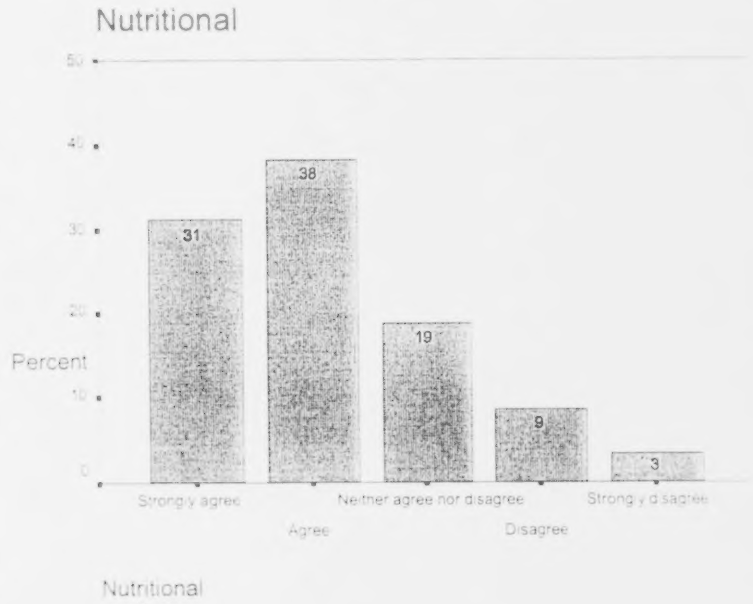


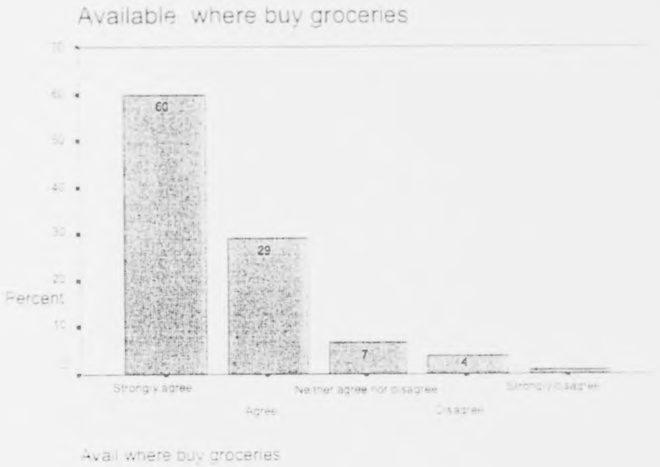
Figure 38: Importance of Nutritional Content



8.2 *Available at Grocery Store*

The effect of product availability at a grocery store on the likelihood to purchase for home consumption was assessed. Respondents were asked to agree or disagree with the statement that when buying a meat product to cook at home they are more likely to buy it if it is available where they regularly buy groceries. As expected, availability seems to be an important determinant of the likelihood to purchase a meat product, with almost 90% of respondents agreeing or strongly agreeing with this statement. This has important implications for the distribution of new bison meat products and should be considered in any marketing strategies adopted by the industry.

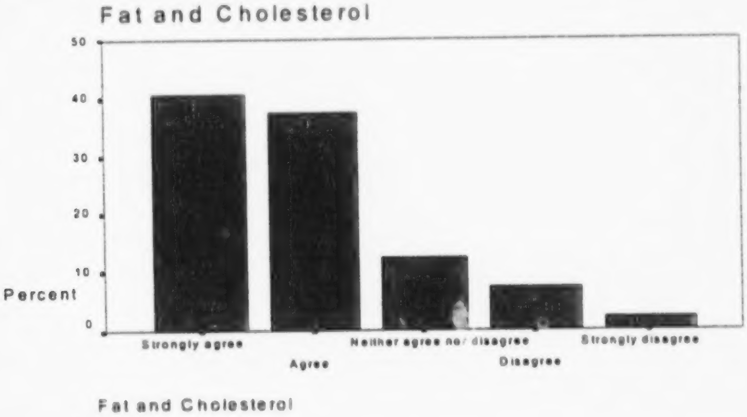
Figure 39: Importance of Availability



8.3 *Fat and Cholesterol Content*

Respondents were asked to agree or disagree with the statement that fat and cholesterol content are important when purchasing a meat product. The majority of respondents supported this statement with 78% agreeing or strongly agreeing with it. Given the claims regarding lower fat and cholesterol content of bison relative to other meats, this is a positive finding for the industry and should be considered when marketing bison products. As with nutritional content, reliable scientific evidence to support this claim and a credible communication strategy with consumers will be important.

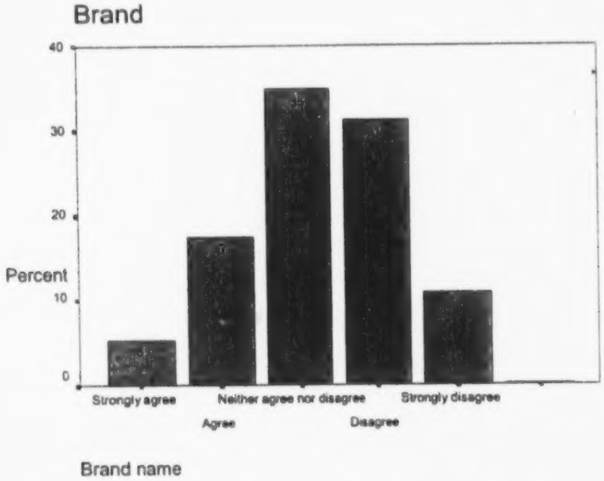
Figure 40: Importance of Fat and Cholesterol Content



8.4 *Importance of a Brand Name*

When developing a marketing strategy it is useful to know the importance consumers place on a brand name. Survey respondents were asked to agree or disagree with the statement that brand name is important when purchasing a meat product to cook at home. This is not particularly important to consumers with only 22% agreeing or strongly agreeing with this statement. A large number (35%) neither agreed nor disagreed while 31% disagreed.

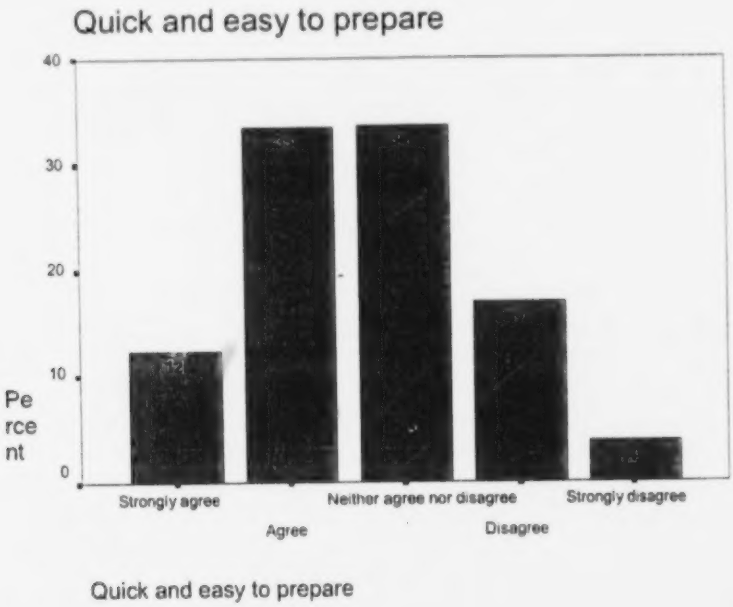
Figure 40: Importance of a Brand Name



8.5 *Convenience in Preparation*

With the rising popularity of convenience foods and products that offer reduced cooking times, it is pertinent to know the importance consumers place on preparation time when cooking a meat product at home. Respondents were asked to agree or disagree with the statement that when buying a meat product to cook at home, it is important that it be quick and easy to prepare. The results suggest that this is important to some consumers with 45% of respondents agreeing or strongly agreeing with the statement but a large number (34%) neither agreed nor disagreed with this statement. Interpreting this rating is difficult but one possible explanation is that the importance of being quick and convenient depends on the situation and on the consumer segment being targeted.

Figure 41: Importance of Convenience in Preparation



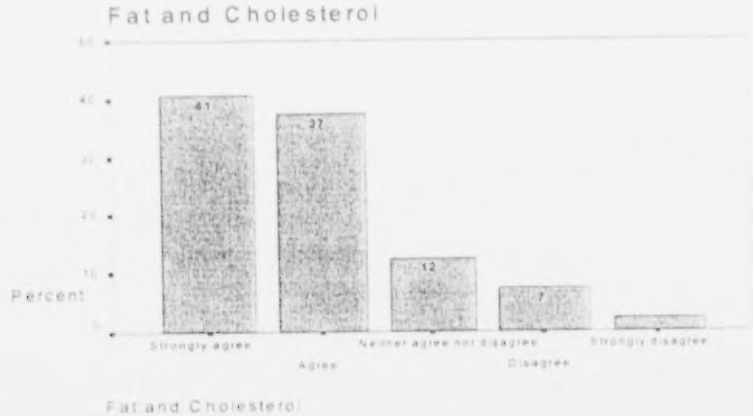
8.6 *Comparison of Prices*

One way to gauge consumer price sensitivity is to gather information on the extent to which consumers compare prices when purchasing a product. Given that bison tends to be sold at a higher price relative to beef, respondents were asked to agree or disagree with the statement that when purchasing a meat product to cook at home they compare prices. An estimated 81% of respondents either agreed or strongly agreed with this statement. Consumers consider themselves to be relatively price conscious when it comes to purchasing meat products. This underscores the importance of evaluating the likely price competitiveness of a new bison product prior to launch.

8.3 *Fat and Cholesterol Content*

Respondents were asked to agree or disagree with the statement that fat and cholesterol content are important when purchasing a meat product. The majority of respondents supported this statement with 78% agreeing or strongly agreeing with it. Given the claims regarding lower fat and cholesterol content of bison relative to other meats, this is a positive finding for the industry and should be considered when marketing bison products. As with nutritional content, reliable scientific evidence to support this claim and a credible communication strategy with consumers will be important.

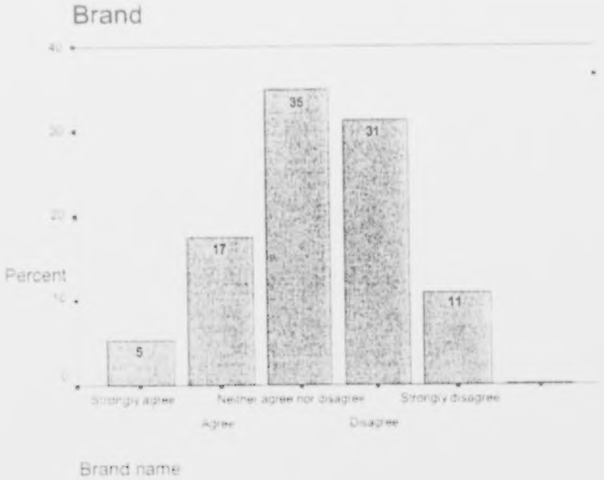
Figure 40: Importance of Fat and Cholesterol Content



8.4 *Importance of a Brand Name*

When developing a marketing strategy it is useful to know the importance consumers place on a brand name. Survey respondents were asked to agree or disagree with the statement that brand name is important when purchasing a meat product to cook at home. This is not particularly important to consumers with only 22% agreeing or strongly agreeing with this statement. A large number (35%) neither agreed nor disagreed while 31% disagreed.

Figure 40: Importance of a Brand Name



8.5 *Convenience in Preparation*

With the rising popularity of convenience foods and products that offer reduced cooking times, it is pertinent to know the importance consumers place on preparation time when cooking a meat product at home. Respondents were asked to agree or disagree with the statement that when buying a meat product to cook at home, it is important that it be quick and easy to prepare. The results suggest that this is important to some consumers with 45% of respondents agreeing or strongly agreeing with the statement but a large number (34%) neither agreed nor disagreed with this statement. Interpreting this rating is difficult but one possible explanation is that the importance of being quick and convenient depends on the situation and on the consumer segment being targeted.

Figure 41: Importance of Convenience in Preparation

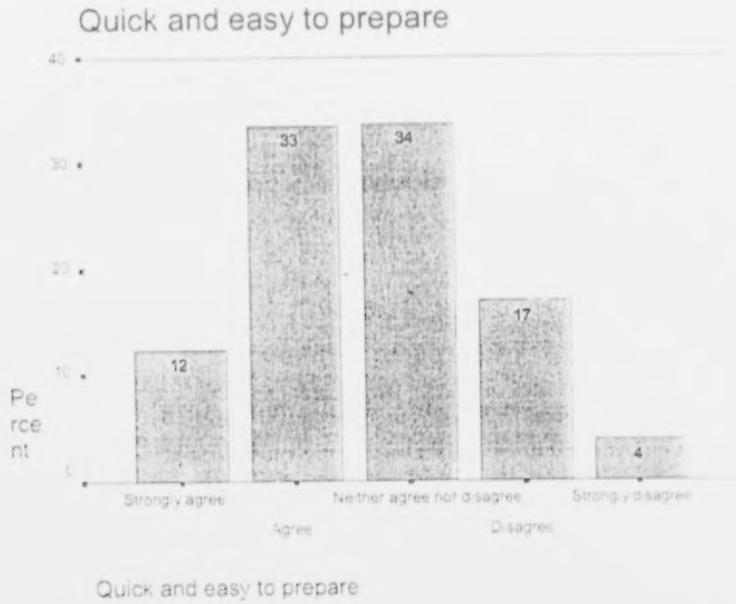


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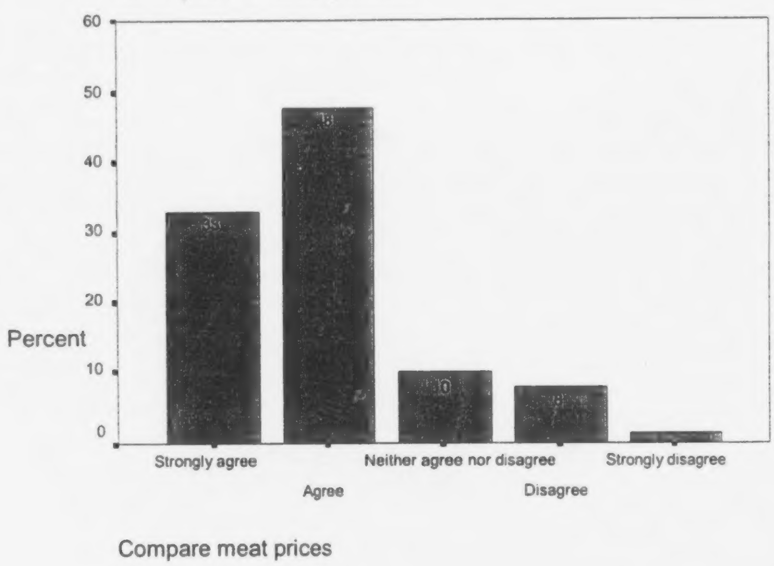
Figure 42: Compare Prices When Shopping for Meat



8.7 *Novel or Unique Eating Experience*

It has been suggested that bison could be promoted as a unique or unusual eating experience. Therefore, we asked respondents to agree or disagree with the statement that when purchasing a meat product to cook at home they look for meat products that will be a novel (unusual or unique) eating experience (Figure 43). We asked the same question with respect to meat eaten in a restaurant (Figure 44). Asking this question was one way to assess whether meat products with an image of being "exotic", "unique" or "special occasion" is important to consumers when purchasing meat to cook at home. For home consumption, there was no clear consensus on this point with 27% agreeing, 34% neither agreeing nor disagreeing, and 27% disagreeing with this statement. Again it is difficult to interpret these "middle of the road" responses but it may depend on the situation. For example, it may be that when making a meal for the family during the week it is not important, whereas it is when having guests over for supper on Sunday. Compared with home consumption, there seemed to be a more agreement with this statement, with almost 60% of respondents either agreeing or strongly agreeing. Further research would be required before any firm conclusions could be drawn about these results, but they suggest a mixed response to a marketing campaign based on bison as a novel eating experience for the home consumption market. This strategy appears to be more suited to products targeted at the food service (restaurant) market (Figure 44).

Figure 43: Importance of Meat Being a Novel or Unique Eating Experience – Home Consumption

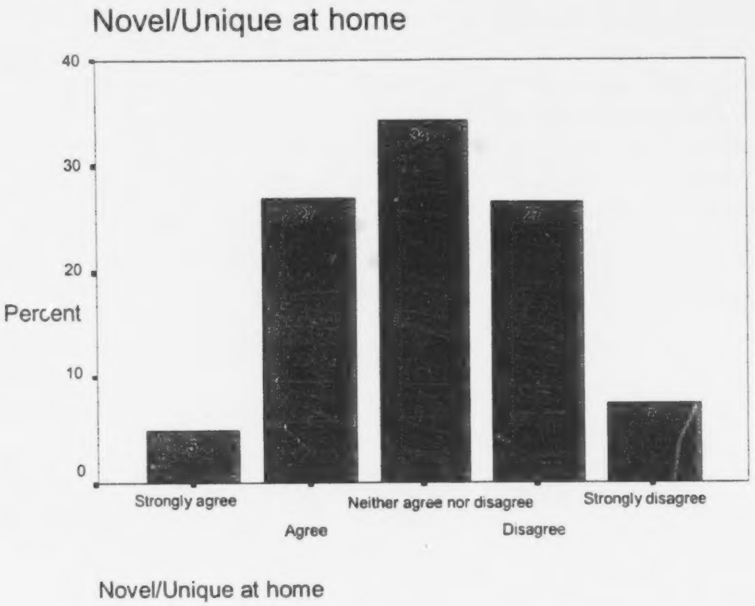
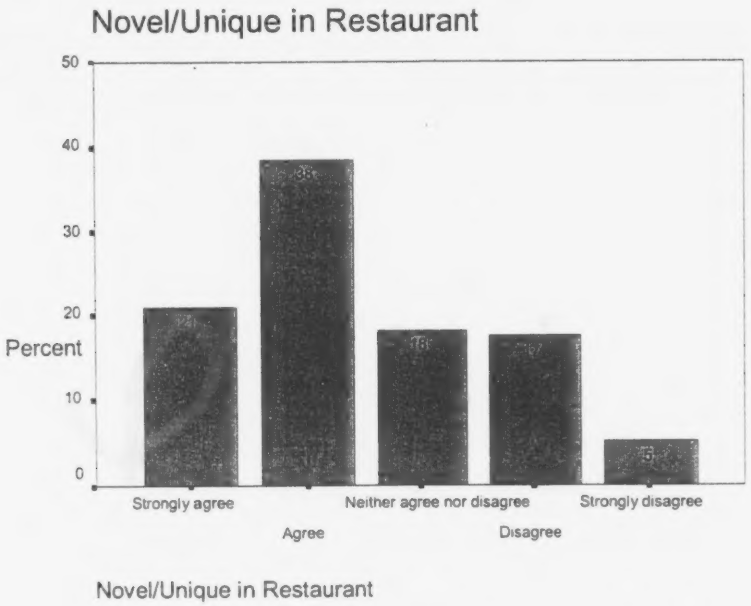


Figure 44: Importance of Meat Being a Novel or Unique Eating Experience – Restaurant



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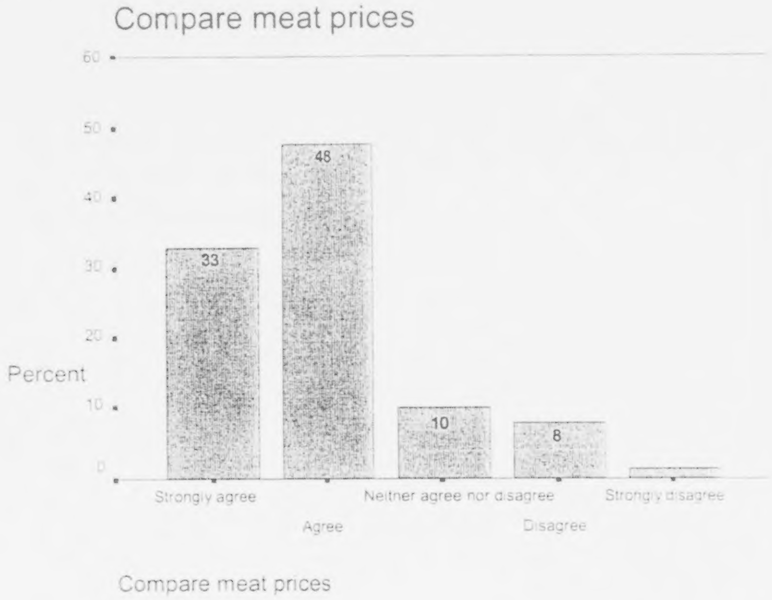

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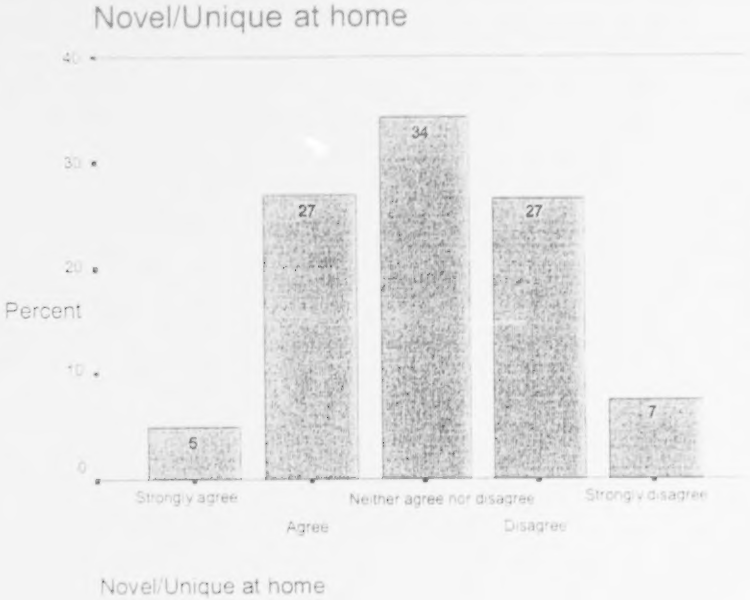
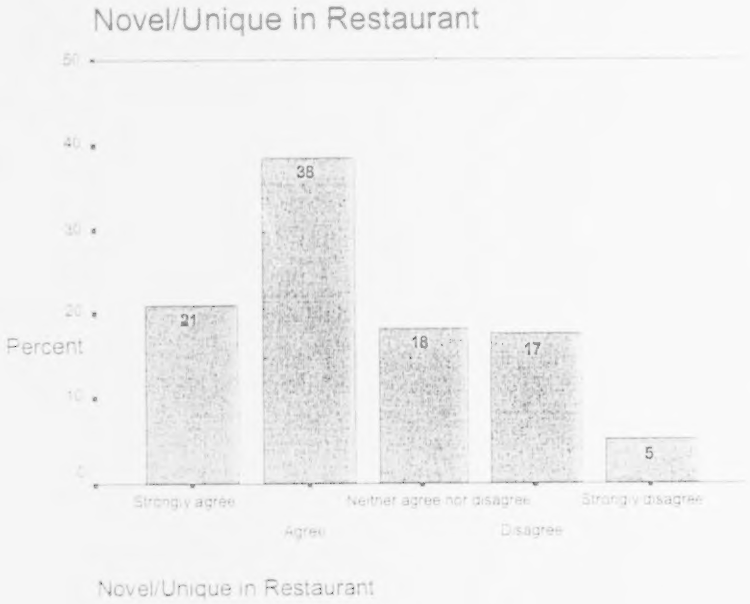


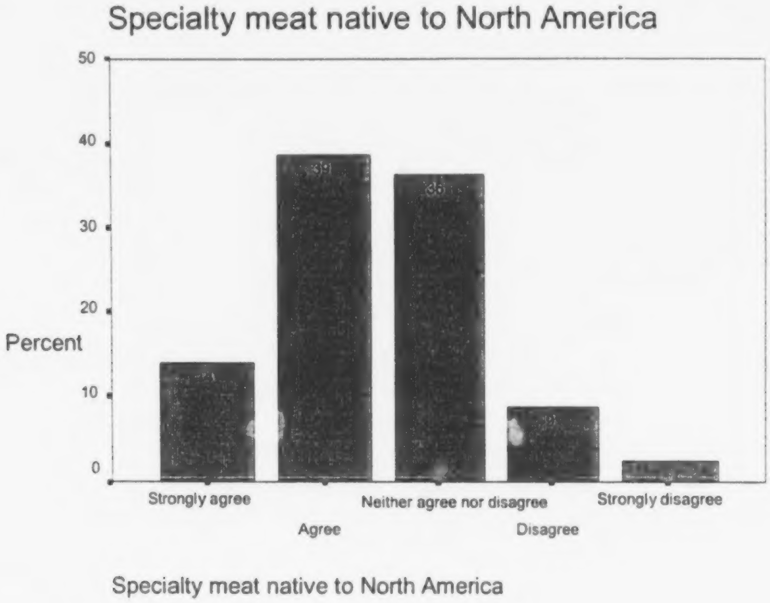
Figure 44: Importance of Meat Being a Novel or Unique Eating Experience – Restaurant



8.8 *Heritage Food*

Another marketing strategy that has been used by the bison industry is promoting the image of bison as a heritage meat, traditional or native to North America. There has been interest in assessing the appeal of this image to the consumer. Respondents were asked to agree or disagree with the statement that a specialty meat product that is native to North America (a traditional or heritage food) is appealing. The results suggest that there is some support for this statement with over half (53%) of respondents agreeing or strongly agreeing. Just over one-third (36%) respondents neither agreed nor disagreed with the statement, which either indicates indifference or perhaps a lack of understanding the term "native to North America" with respect to a meat product.

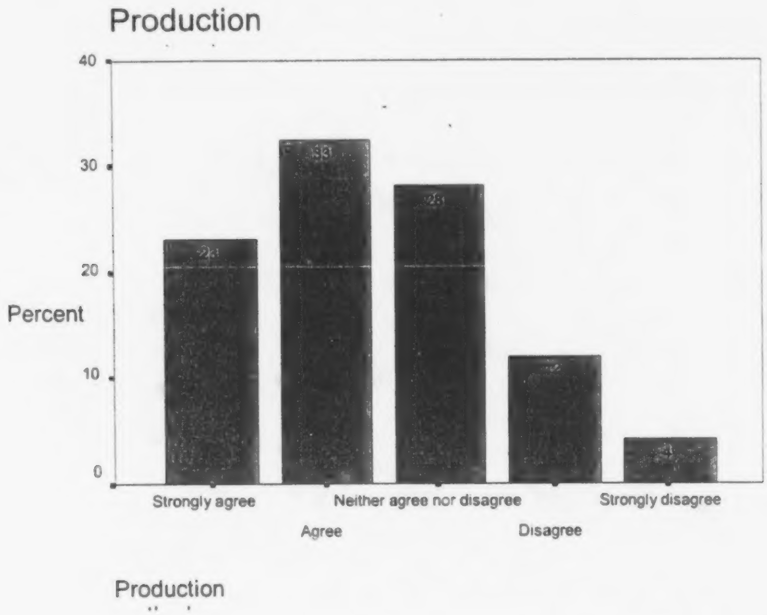
Figure 45: Importance of Specialty Meat Native to North America



8.9 Production Methods

The "natural" production methods used to grow bison relative to cattle (e.g. in most cases, absence of administered growth hormones) has been cited as a potential competitive advantage. To assess the importance of this for consumers, respondents were asked to agree or disagree with the statement that production methods used to produce the meat product (e.g. organic, natural production methods, humane treatment of animals) are important when they buy a meat product. More than half (56%) of respondents agreed or strongly agreed with this statement while almost 30% of respondents neither agreed nor disagreed with the statement. With over half of the respondents supporting this statement and another 30% giving an indecisive response this may be signaling a growing issue for the Canadian meat industry in the near future. Although further research on this issue would be needed before firm conclusions can be drawn, these results suggest that industry support and promotion of "natural" production methods could be a viable marketing strategy. The laboratory market also addressed this question and is discussed in more detail in a later section.

Figure 46: Importance of On-Farm Production Methods



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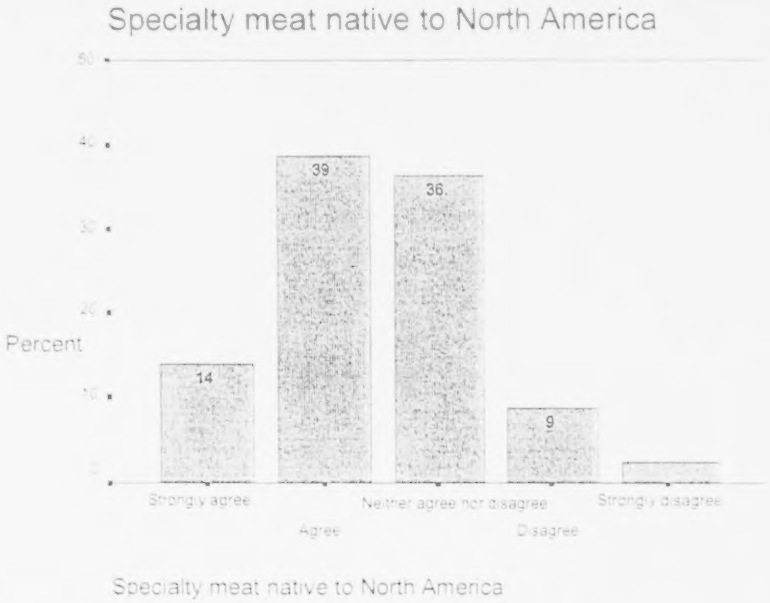

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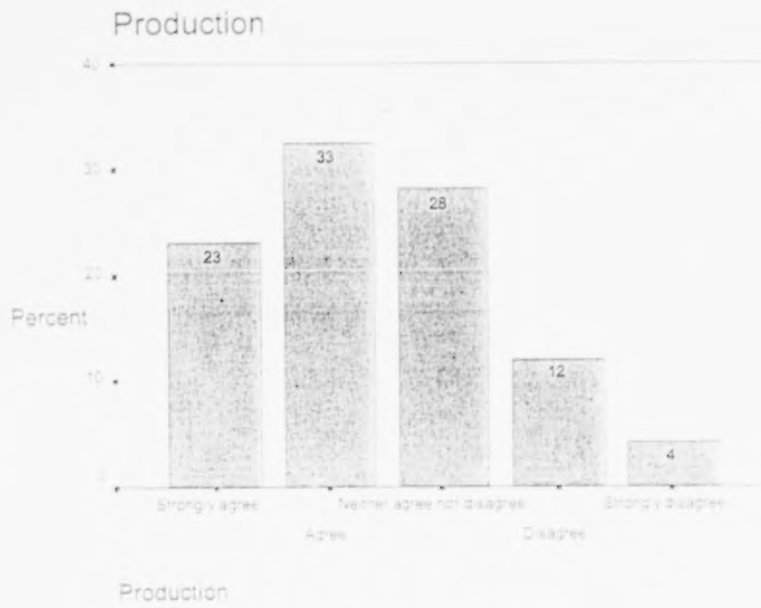
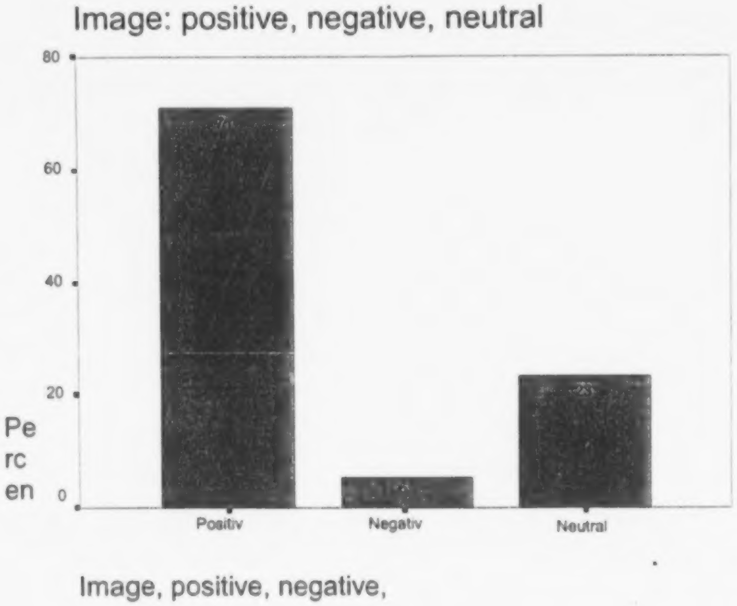


9. PERCEPTIONS OF BISON

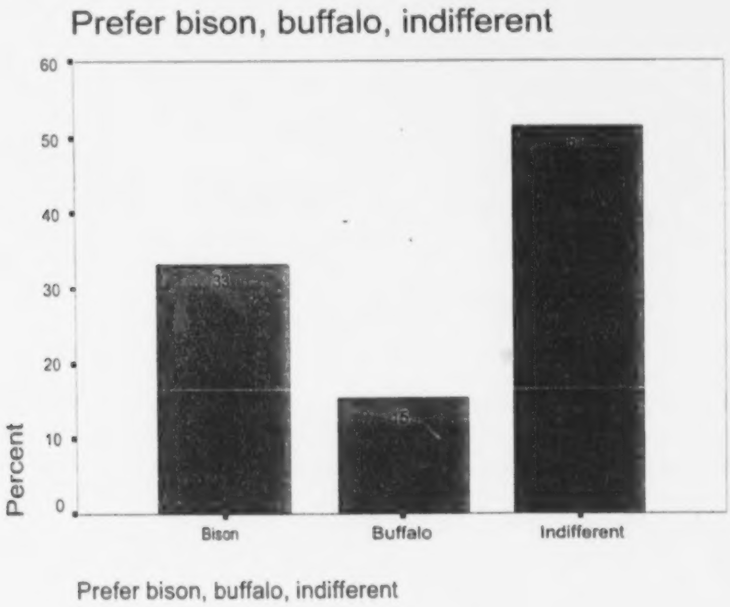
The written survey provided an opportunity to gather information on consumers' attitudes towards bison in general. Respondents were asked to indicate whether their overall image of the bison industry was positive, negative or neutral (neither positive nor negative). The results suggest that respondents have a very favourable image of the industry with over 70% indicating their image is positive. In this sense, bison may have an advantage over traditional meats as "the new kid on the block" for whom some consumers have not yet developed strong negative attitudes (for example on issues such as the environment or animal welfare), which may not be the case for traditional meats. As people become more familiar with bison, it will be important for the industry to be proactive in maintaining its positive image.

Figure 47: Overall Attitudes Towards the Bison Industry



A topic of debate within the industry is whether to use the term "buffalo" or "bison" when referring to meat products. Respondents were asked if they would be more likely to buy a bison/buffalo meat product if it were labelled bison, buffalo or if it made no difference to them. Figure 48 shows that just over 50% were indifferent while 33% preferred the name bison. Only 15% said they preferred the name buffalo. Notable differences were in Ontario, where 46% preferred the name buffalo and 46% were indifferent. In Québec 61% prefer the name bison and 34% were indifferent, however, this is to be expected given that the French language word for the species is bison. At the end of the survey process, informal discussions were conducted with most consumer groups. Although these were not formal focus groups discussions, they provided an opportunity to discuss additional issues with respondents, including their attitudes towards the terms "buffalo" Vs "bison" (whereas the written survey question had asked if they would be more likely to *buy* the meat if it were called buffalo or bison). During these discussions, strong support emerged for the name "bison". The "name indifference" on the written survey may be telling us that for those "indifferent" respondents, once they had made a decision to buy the product its name would be irrelevant, but when asked which name they preferred the majority said bison. In the discussions, frequent comments (in all locations) were that bison sounded "more exotic" and that buffalo reminded them too much of the animal. A few people commented that they did not know what bison was before attending the consumer panel and were more familiar with the term buffalo. This suggests the need for consumer education so that people realize what bison is but also that it is probably far more important for the industry to focus on the key attributes of bison rather than on what to call it. It seems clear that for industry organisations currently using the name "bison", the expenditure of significant resources to change the name to "buffalo" does not seem warranted. At any rate, it should only be undertaken after careful consumer research that specifically addresses this question.

Figure 48: Should we call it "Bison" or "Buffalo?



In a developing industry decisions about product development and marketing strategies require knowledge of consumer perceptions of the product and the industry. To gather information about consumer images of bison, respondents were asked to agree or disagree with six statements about bison. The results provided below (Figures 49-55) indicate both positive images upon which a marketing strategy could build and negative images that it could seek to dispel.

Almost 80% of those surveyed believe that bison meat is a healthy meat (Figure 49). This is a very positive image and one that should be emphasised. There was not clear agreement on whether bison meat is perceived as a special occasion meat (Figure 50), with an even split of about 37% agreeing and disagreeing, with the balance neither agreeing nor disagreeing. This probably depends on the cut of meat (i.e. perhaps a bison steak is seen a special occasion meat but a bison burger is not) or it

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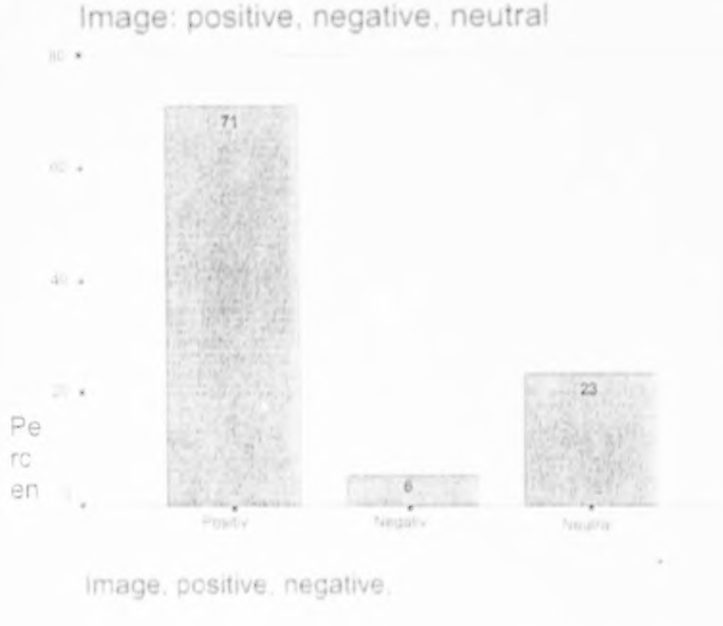

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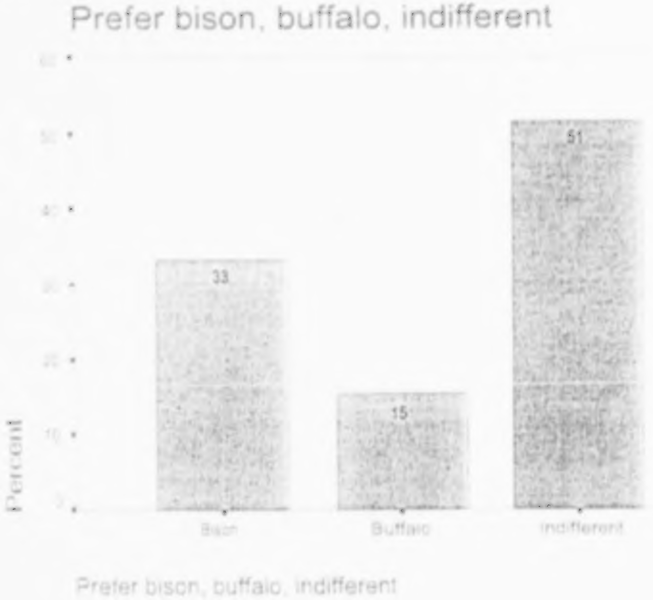

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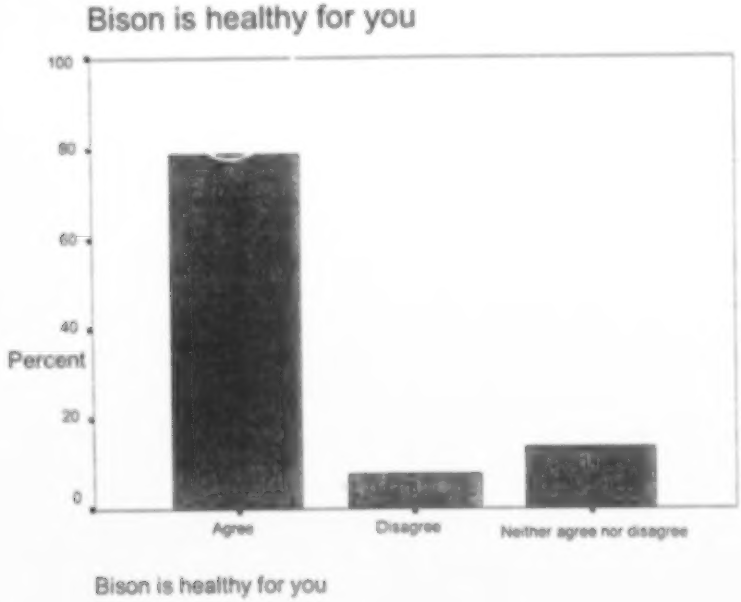
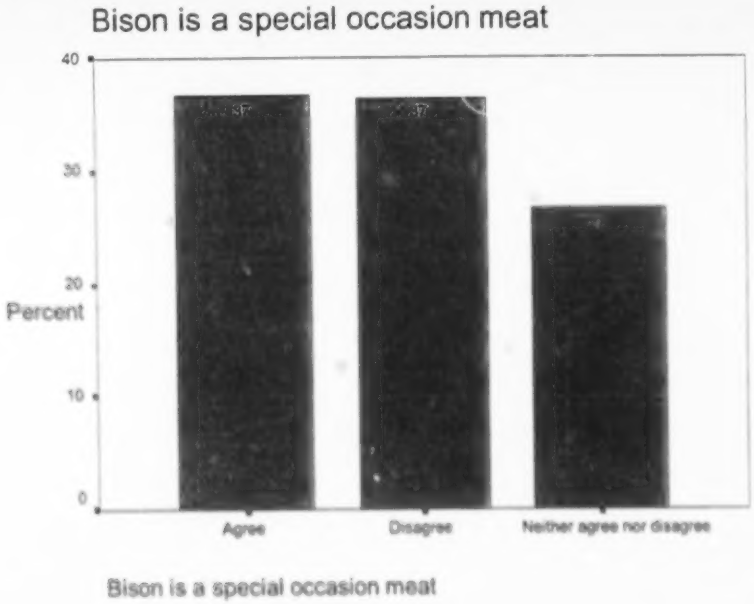
Figure 49: "Bison is a Healthy Meat"



When asked if they believe bison is a unique, heritage meat, 62% of respondents agreed, 25% neither agreed nor disagreed and 13% disagreed (Figure 51). This suggests that bison is thought of by many consumers as a "heritage" meat, which when combined with the positive response to the earlier question about the appeal of a heritage or native to North America meat, indicates that this may be a useful marketing strategy for some bison products.

Figure 50: "Bison is a Special Occasion Meat"



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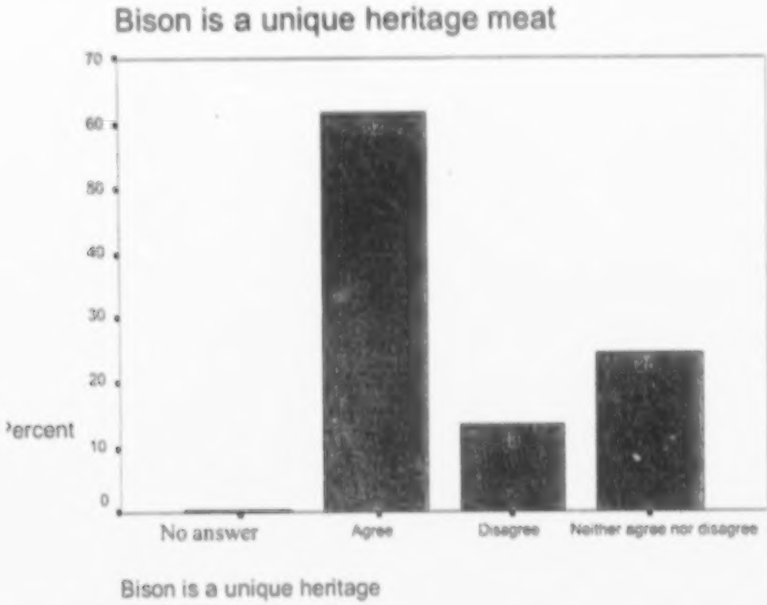

About half (51%) of respondents disagreed when asked if bison tastes "gamey" or wild (Figure 52). This leaves about half who either agreed with the statement (22%) or neither agreed nor disagreed (27%). Some of the comments on the taste panel questionnaire and in informal discussions with may be that as more bison meat products become available it is moving from a speciality to mainstream meat.

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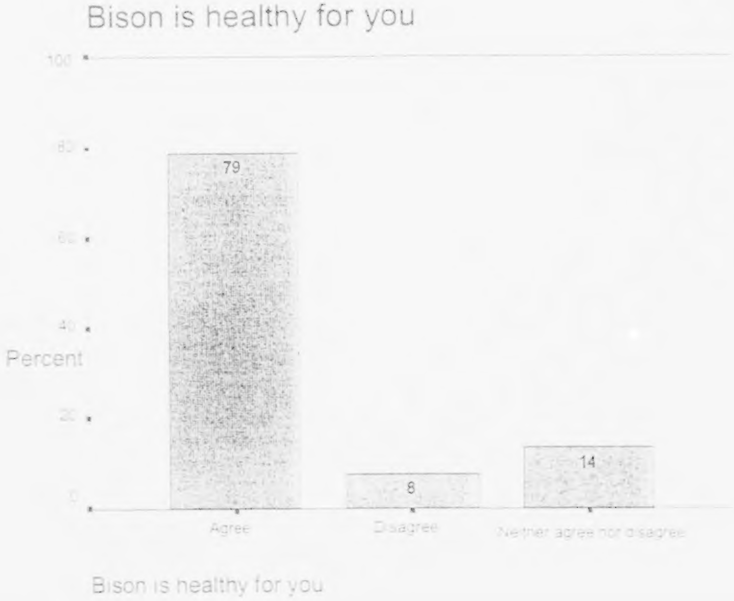

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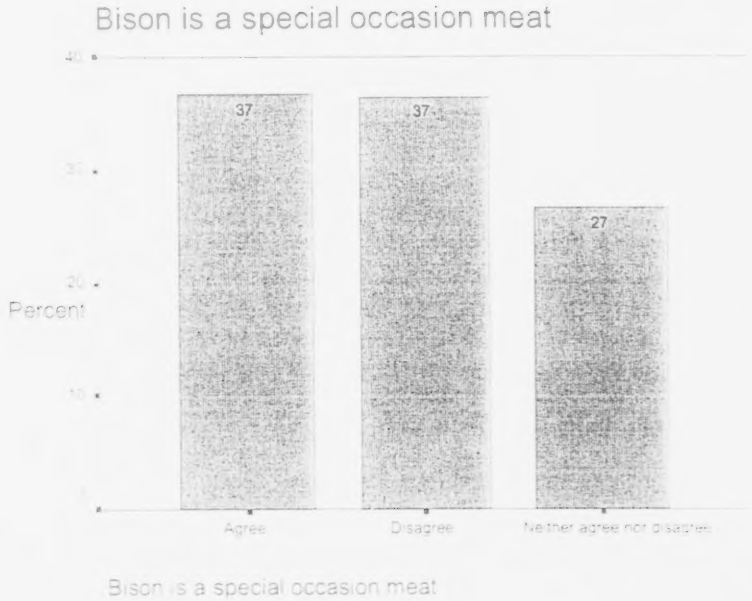

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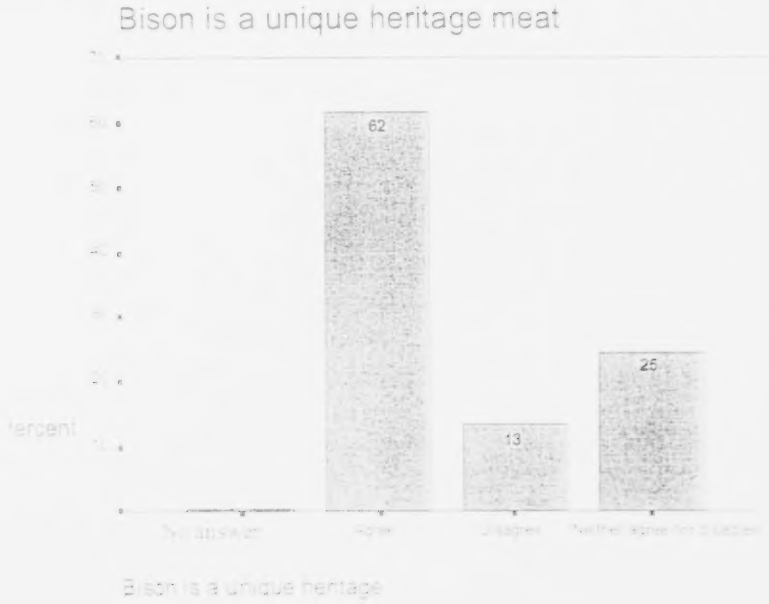
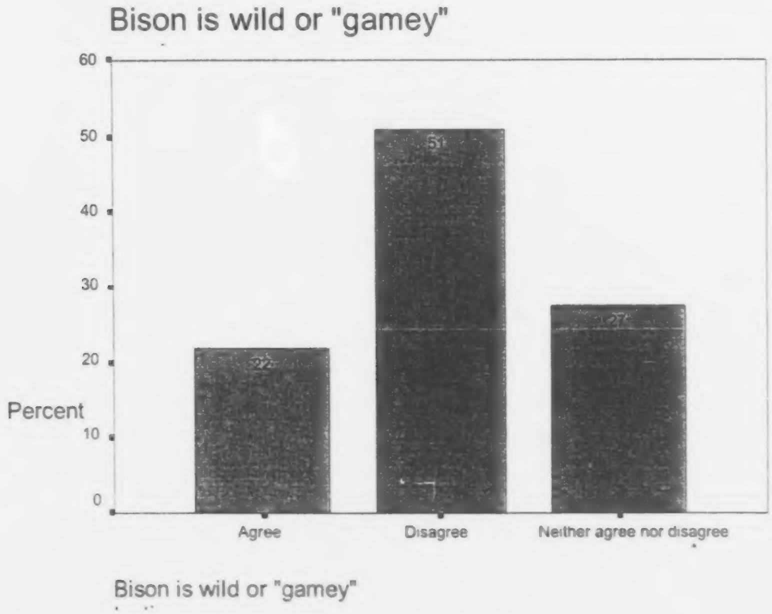


About half (51%) of respondents disagreed when asked if bison tastes "gamey" or wild (Figure 52 This leaves about half who either agreed with the statement (22%) or neither agreed nor disagreed (27%). Some of the comments on the taste panel questionnaire and in informal discussions with participants, revealed that a number of people had expected bison to be wild or gamey in taste before trying it, and were pleasantly surprised when it was not. Note that, with the exception of half the Saskatchewan sample, respondents had completed the taste panel before answering these questions. If "gamey" or wild tasting is perceived as a negative attribute, a strategy to educate the public about bison meat products would be useful. Again, when asked if bison meat is tough about half (52%) disagreed while 29% neither agreed nor disagreed and 20% agreed with the statement (Figure 53). Clearly, for a meat product toughness is negative image and future product development should continue to address the tenderness issue. When asked if they believe bison is a dry meat 46% disagreed, 26% agreed and 27% neither agreed nor disagreed (Figure 54). This is another perception that the industry needs to address through further product development and marketing. When asked if they believe bison is an endangered species 50% disagreed, 34% neither agreed nor disagreed and 15% agreed (Figure 55). Thus, a surprising half of respondents either believe (erroneously) that bison are an endangered species or do not know. If not corrected through consumer education, this misperception could remain an impediment to widespread future sales growth.

Figure 52: "Bison Has a Wild or Gamey Taste"



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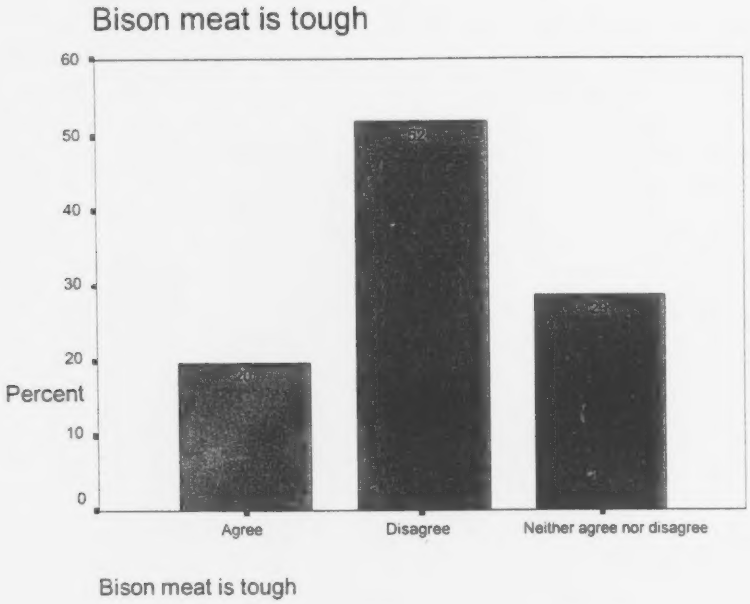
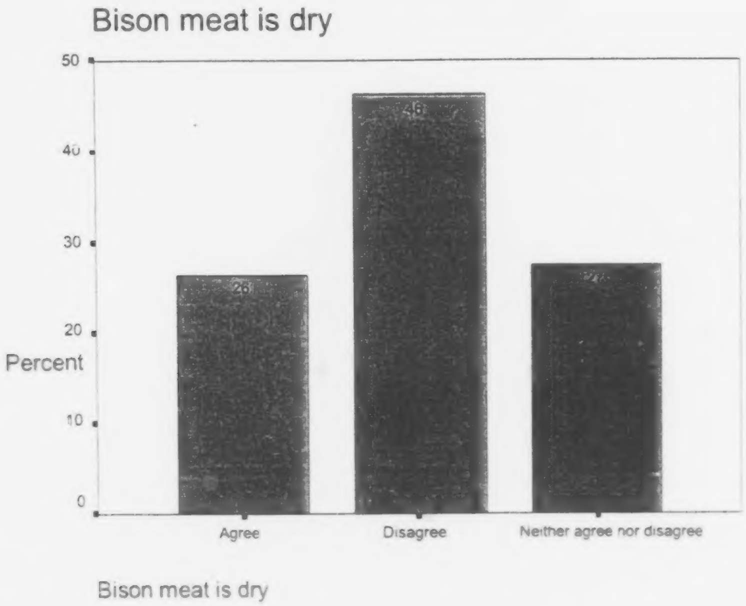


Figure 54: "Bison Meat is Dry"



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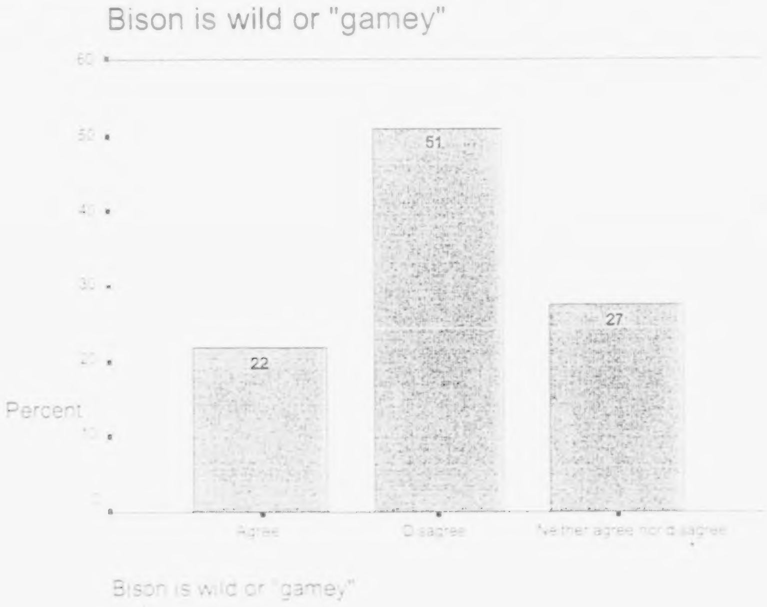

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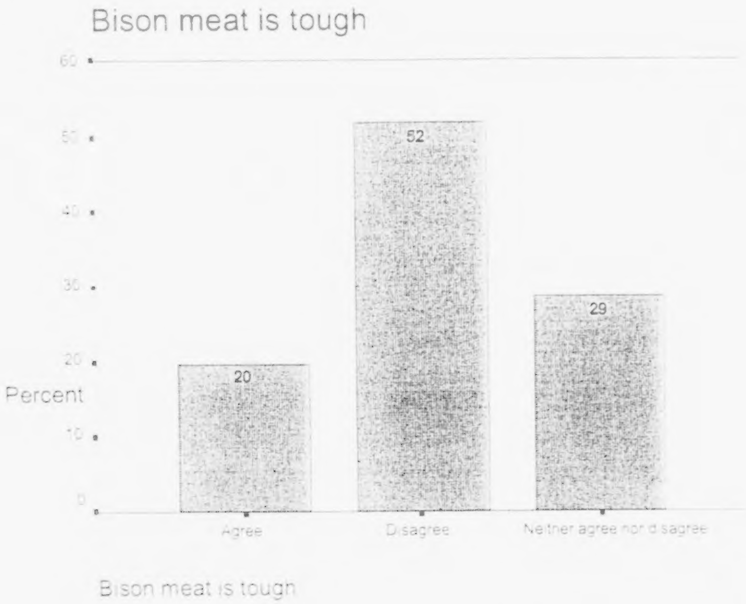

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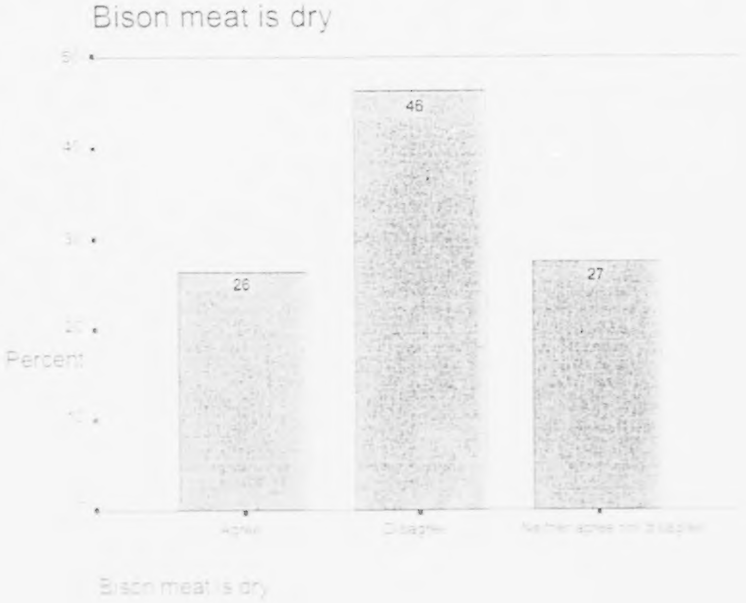
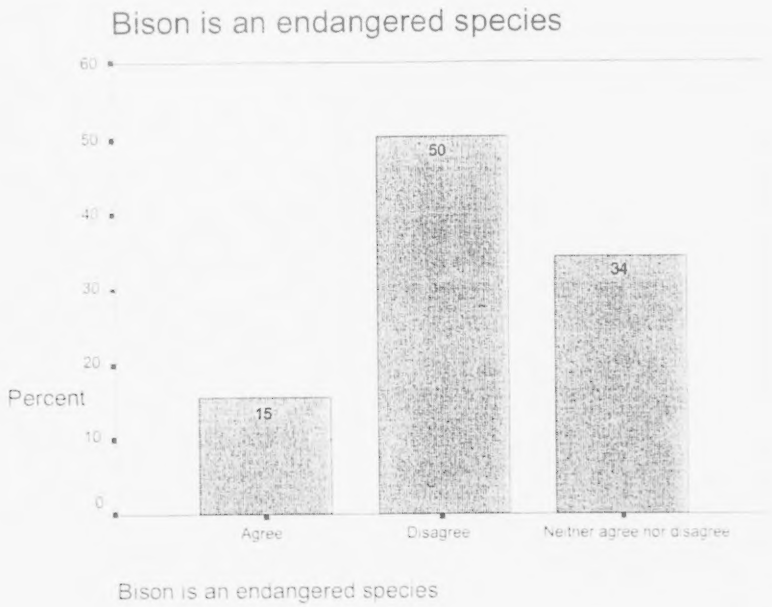


Figure 55: "Bison are an Endangered Species"



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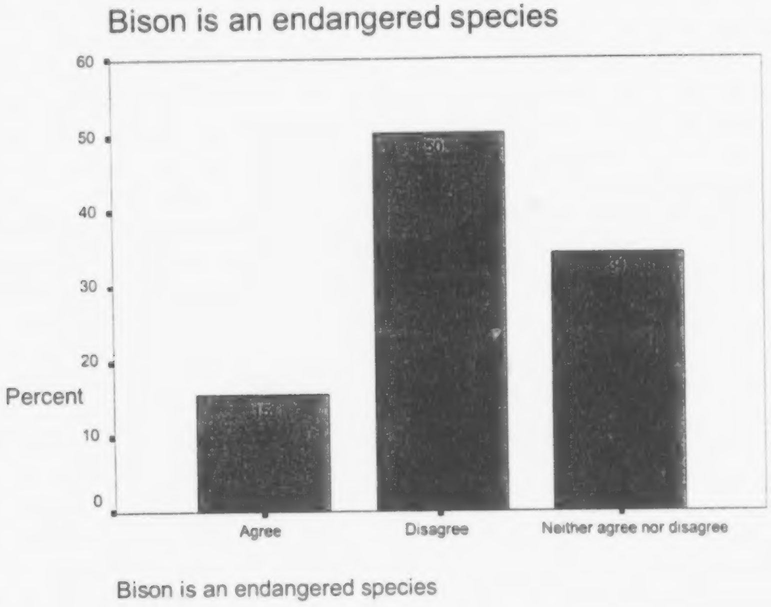


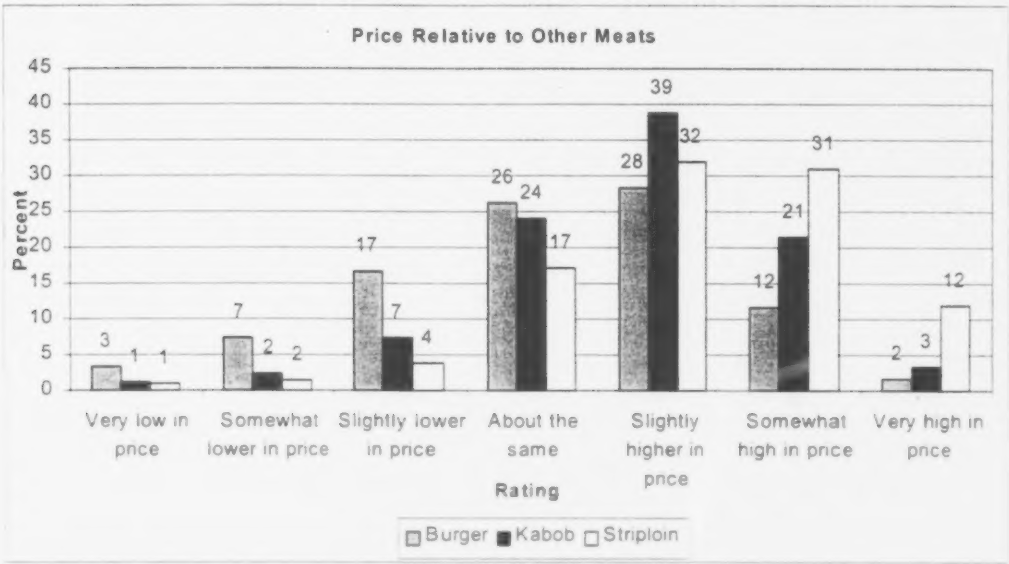
10. Bison Relative to Other Meats

It is useful to assess how people perceive bison relative to competitor meat products. To help us build a picture of the relative competitive positioning of bison respondents were asked to give their opinion on different aspects of 15 meat products including bison burgers, bison kabobs and bison striploin steak. Other products included beef, pork, chicken, lamb, veal and lobster cuts and further processed products. They were asked to compare each product to other meat products on the basis of price, healthiness, whether the product is considered a special occasion meat and whether they would be more likely to eat the product in a restaurant or at home.

10.1 Price

Respondents compared each of the 15 products on the basis of their perceptions of the product's price relative other meats on a scale of 1 to 7, where 1= extremely low in price and 7= extremely high in price. Figures 56-58 present the results for the three bison products listed on the written survey. Bison burger were thought to be about the same in price as other meat products or slightly higher by 58% of respondents. Bison kabob were thought to be slightly higher in price by 39% of respondents, about the same as other meat products by 24% and somewhat higher in price by 22% of respondents. Over 60% if respondents expected a bison striploin would be slightly or somewhat higher in price relative to other meat products. In general it can be concluded that respondents consider bison to be slightly higher in price relative to other meat products and believe this is true more so for the striploin steak than the burger and kabob.

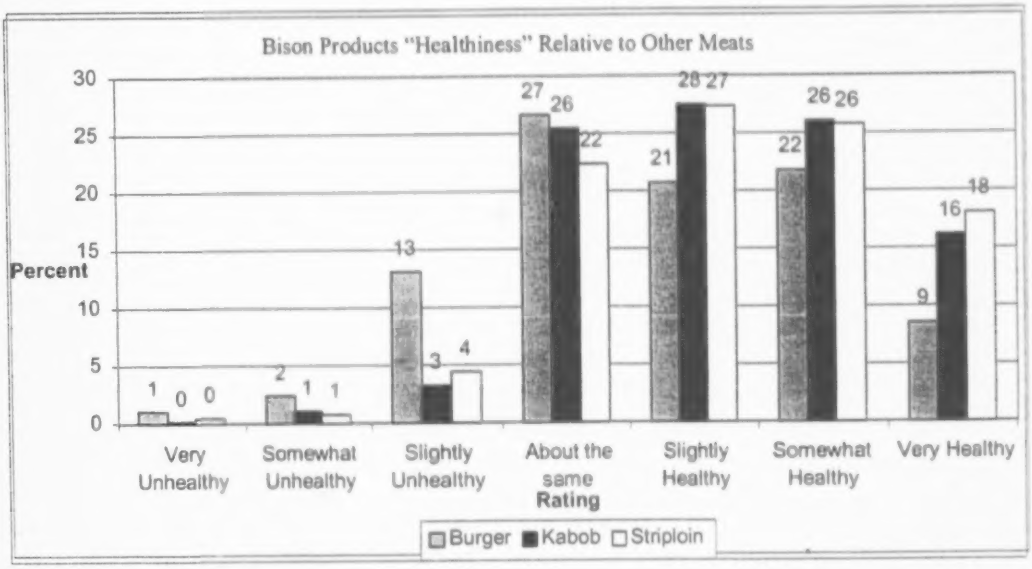
Figure 56: Perceptions of Bison Products Relative to Other Meat Prices



10.2 Healthiness

Respondents were asked to rate the "healthiness" of 15 meat products on a scale from 1= very healthy to 7= very unhealthy. A bison burger was rated by 54% of respondents as being slightly to very healthy relative to other meat products, with a further 28% rating it as about the same (Figure 59). A larger percentage of respondents believed that a bison kabob would be slightly to very healthy relative to other meat products (70%) and 26% rated it as about the same (Figure 60). Similar to the kabob, 72% of consumers felt that a bison striploin would be slightly to very healthy relative to other meat products and 23% rated it as being about the same (Figure 61). This confirms that, relative to other meat products bison, is considered to be a "healthier" meat and is encouraging when combined with the apparent importance placed on health and fat/cholesterol content in earlier survey questions.

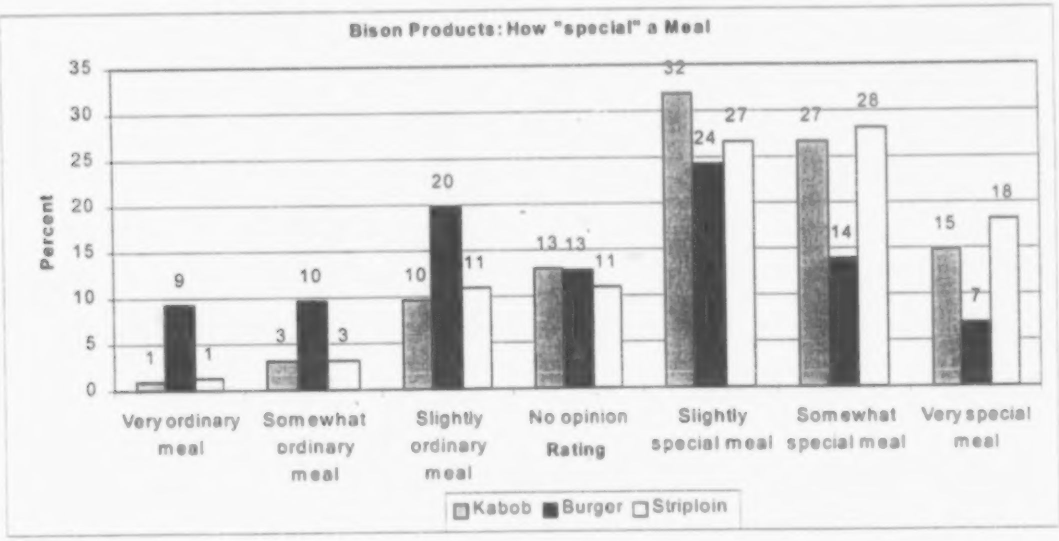
Figure 57: Perceptions of Bison Products Healthiness Relative to Other Meat Products



10.3 Special Occasion Vs Everyday Eating Experience

To assess whether consumers consider different meat products (including bison) to be a novel or "special" meal, respondents were asked to indicate whether they regarded the three bison meat products as a regular, every day type meal or a unique, special occasion eating experience with 1= very ordinary or every day and 7= very special meal. The results for the three bison products are presented in Figures 62-64. A bison burger was rated as slightly to very special by 46% of respondents. A bison kabob and a striploin were regarded as slightly to very special meal occasions by 74% and 73% of respondents respectively. These results confirm the earlier supposition that whether consumers consider the meat to be a "special occasion meal" depends to some extent on the cut. These differences may be related to the price or to the occasion at which they would be consumed.

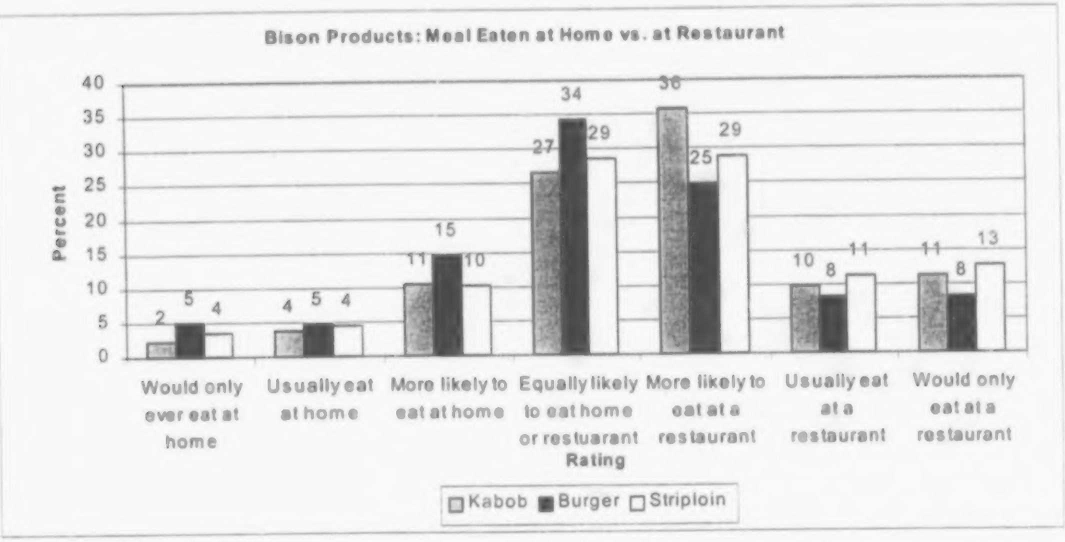
Figure 58: Bison Products: Special Occasion Vs Everyday Meal



10.4 ***Restaurant Vs Home Consumption***

Consumers were asked to indicate *where* they were most likely to consume each meat product on a scale of 1 to 7, with 1= if I eat this product, I would only ever eat it at home to 7= if I eat this product, I would only ever eat it in a restaurant. If we assume eating in a restaurant is more likely to be the venue for a "special meal" then the results support the previous findings that burgers are less of a "special" meal than are kabobs and striploin steak (Figure 65). A total of 41% of respondents gave answers ranging from more likely to eat the bison burger in a restaurant to would only eat it in a restaurant. This number rises for the kabob and striploin with 57% and 53% respectively (Figures 66 and 67).

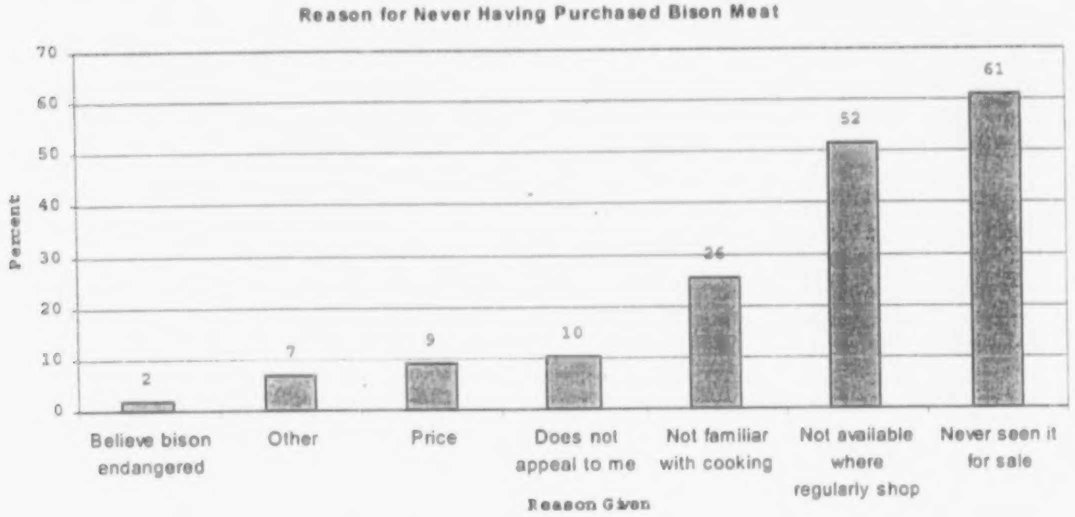
Figure 59: Bison Products: More Likely to Consume in a Restaurant or at Home



11. Reasons for Not Purchasing Bison

The survey asked people if they had ever purchased bison meat. Those that had not were asked a follow-up question about the reason(s) why. They could choose from among a list of reasons, including: not usually available where I regularly shop; price; not familiar with how to cook it; have never seen bison meat for sale (do not know where to purchase); believe bison are an endangered species; bison does not appeal to me as a meat; or they were given the opportunity to list a different reason. The most frequently cited reasons for not having purchased bison were that respondents had never seen it for sale (61%), it was not available where they regularly shopped (52%), while approximately 25% indicated that it was because they were not familiar with how to cook it (Figure 68).

Figure 60: Reasons for Never Having Purchasing Bison



12. LABORATORY MARKET RESULTS

A laboratory market – or experimental auction - was conducted to elicit information about consumer willingness-to-pay for bison meat and for specific meat attributes. Each respondent was given a beef sandwich containing deli style roast beef similar in format to the bison deli roast they had tasted. They were also provided with $10[3]. They were then given the opportunity to bid to exchange their beef sandwich for one of four different bison sandwiches. All sandwiches were identical to their beef sandwich except for the meat. Sandwich 1 was a bison meat sandwich with no additional information provided; Sandwich 2 contained bison meat that was 60% lower in fat than the panelists' beef sandwich[4]; Sandwich 3 contained bison meat that we knew could verify had been produced without the use of growth hormones; and Sandwich 4 contained bison meat that we could verify as 60% lower in fat than the beef sandwich and produced without the use of growth hormones. Respondents were given the chance to bid the amount they would be willing to pay to exchange their beef sandwich for each of the four bison sandwiches in 10 consecutive rounds of bidding. All bids were private information. At the end of the bidding one sandwich and one round of bidding was randomly selected to be the binding round. The highest bidder then paid the market price and exchanged their sandwich for the bison sandwich. Panelists were informed that only one round and one sandwich would be randomly chosen and that there would be an exchange of money and sandwiches at the end of the experiment. They were expected to eat their sandwich before leaving the room. Thus, people are encouraged to bid their true valuations for bison sandwiches. Positive bids indicate that the individual would prefer to eat the bison sandwich rather than the beef sandwich, negative bids indicate that they would prefer to eat the beef sandwich and zero bids were appropriate if the individual was indifferent between eating the beef or the bison sandwich.

Respondents had been asked during the taste test to state what they were willing to pay for each product. The laboratory market bidding experiment provides the opportunity to actually see what respondents are willing to pay because if they are the successful bidder they will actually have to pay money for the bison meat sandwich. As the participants are bidding what they would be willing to pay to exchange the sandwiches the laboratory market is revealing the premium (if any) that respondents are willing to pay for each different bison sandwich over beef. By offering four different bison sandwiches with specific attributes of reduced fat content and 'hormone-free' it is possible to estimate consumer willingness-to-pay for these attributes. The premium consumers are willing for these attributes could then be compared to the cost of providing this information. In other words a cost/benefit analysis of providing this information could subsequently be performed using this information.

The results of the laboratory market for the entire sample and each of the sites are provided below. The graphs present average bids across each of the 10 rounds. For all locations the participants, on average, were willing to pay considerably more for a bison meat sandwich that is 60% lower in fat (Sandwich 2) than for the bison sandwich for which this information could not be verified (Sandwich 1). The bison sandwich which was verified has having been produced without the use of growth hormones (Sandwich 3) also appeared to command a premium on average. Consumers valued the bison sandwich that was 60% lower in fat and produced without the use of growth hormones (Sandwich 4) more than any of the other three bison sandwiches. These results suggest that consumers, on average, are willing to pay more for the attributes of reduced fat content and 'hormone free'. Of course, it would be necessary to determine the cost of providing these attributes (e.g. testing meat for fat content, monitoring for growth hormones, providing information to consumer through advertising and labelling) before the returns to the industry of developing or promoting these could be assessed. It is important to remember that these graphs only show the average bids, whereas there was a wide distribution of bids, including a large number of zero bids for sandwich One (bison only), indicating that many consumers were indifferent unless the bison meat offered them something extra. Thus, these results strongly suggest the need to emphasize and develop the "extra" benefits of bison in order to command a premium in the marketplace. Further analysis is being conducted on this data, including correlating the willingness-to-pay with consumers' socio-economic characteristics.

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[3] The $10 payment was used so as to keep the initial endowment consistent across all locations and all respondents.

[4] The lower fat content had been verified in a previous fat comparison test.

Figure 61: Laboratory Market Bidding Results – Full Sample

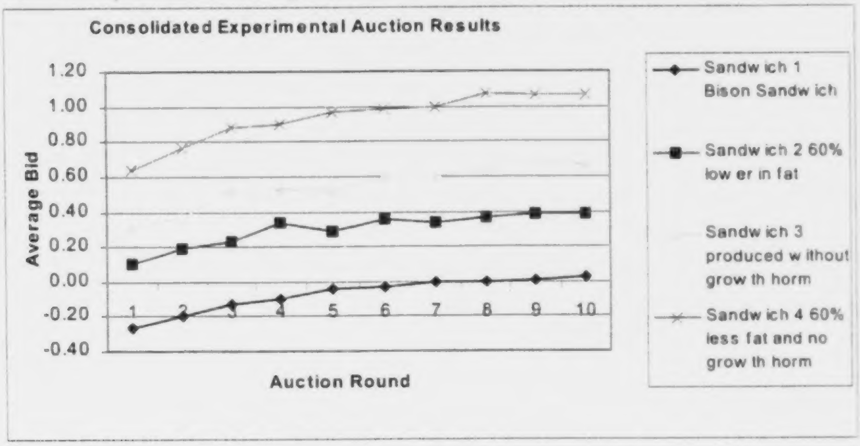


Figure 62: Laboratory Market Bidding Results – Saskatchewan

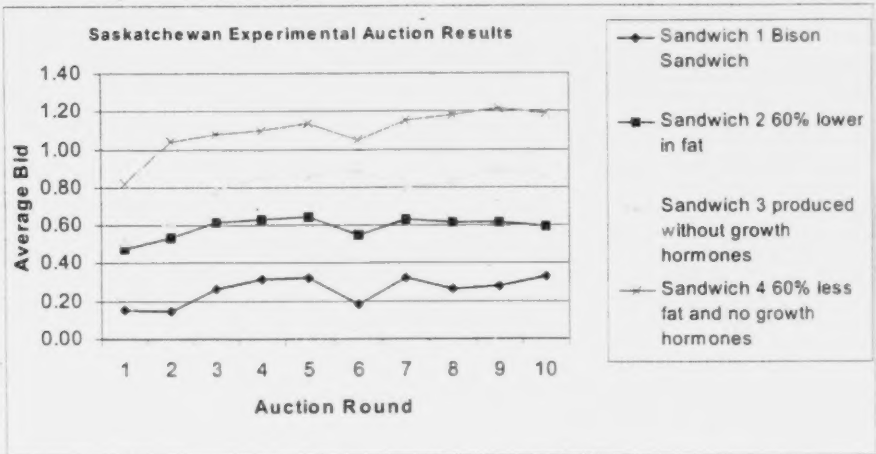


Figure 63: Laboratory Market Bidding Results – Alberta

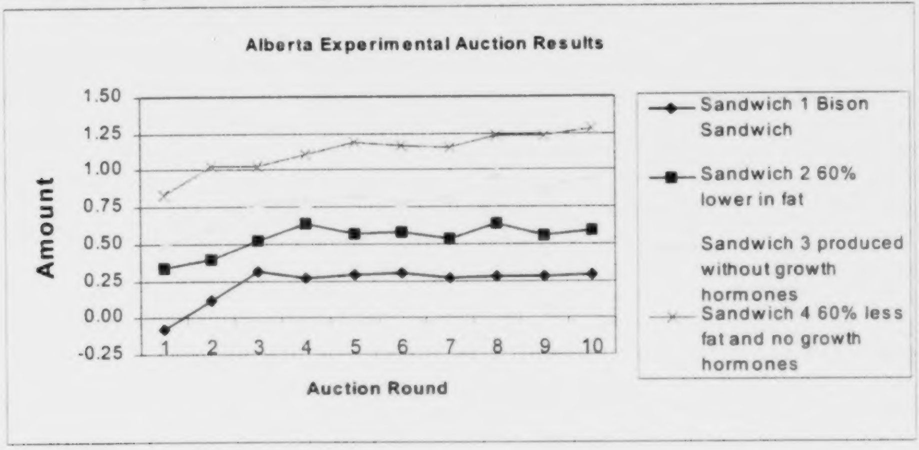


Figure 64: Laboratory Market Bidding Results – BC

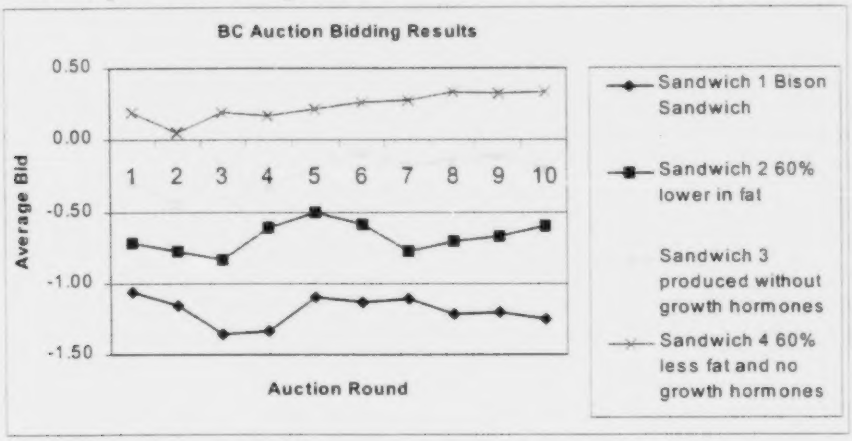


Figure 65: Laboratory Market Bidding Results – Ontario

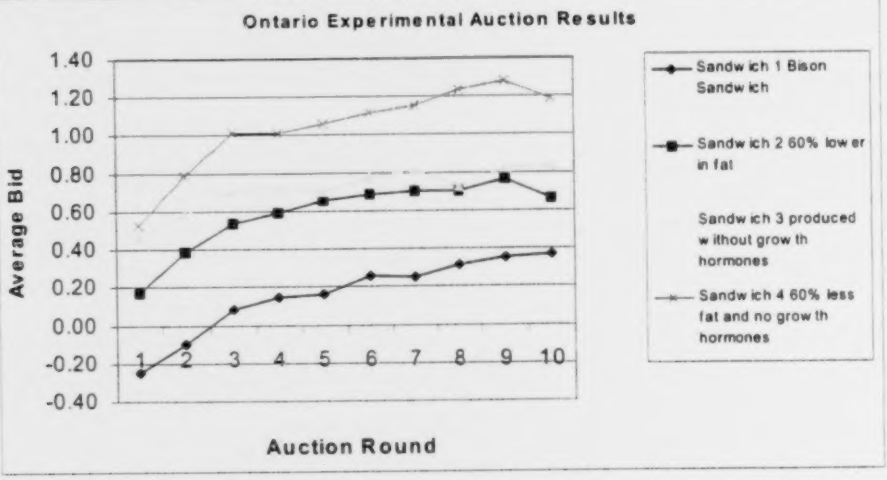
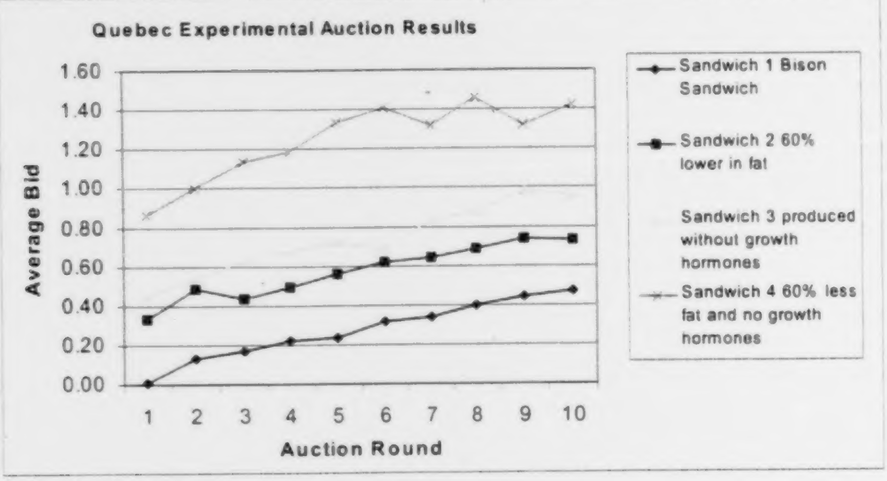


Figure 66: Laboratory Market Bidding Results – Québec



13. CONCLUDING REMARKS

Both the taste panels and the written survey results provide us with important initial insights into consumer attitudes towards bison in Canada.

- On average, BC was the least receptive to the bison products, although there was a wide variety in opinions. Further analysis by socio-economic grouping may shed some light on this.

- Similarities were found in responses between Alberta and Saskatchewan respondents, suggesting (not perhaps unexpected) similarities in these markets.

- The kabob received the highest ranking in three of the five locations (although respondents were required to choose a most preferred product from among the four tasted). The kabob appears to be a promising product for further development. All four products elicit positive responses from at least a subset of respondents and would be worthy of future product development depending on the market of interest and the season anticipated for product launch (e.g. burgers in the summer).

- Using 'overall acceptability' ratings, it is harder to identify a clear winner among the four products. Clear losers appear to be the burger in BC and the deli roast in Saskatchewan. Again this is perhaps not unexpected given that we were comparing four different products, rather than four versions of the same product – and consumers are heterogeneous so different people are likely to prefer different types of product. The lower acceptability of the stew in Alberta may be due to a product difference and should be interpreted with caution.

- Product consistency may be harder to achieve in a product such as a kabob. This showed up in the large variations in consumer evaluations of tenderness within the same panel, due perhaps to differences in the size of the meat chunks and/or variations in tenderness across kabobs.

- Stated willingness to pay varied considerably between the products, with the burger and kabob having the largest premiums relative to the comparable beef products. This willingness to pay requires further research (ongoing) but suggests that consumer willingness to pay a premium over beef prices for bison will vary depending on the product offered.

- The retail or food service positioning of different products is an important consideration for future retail/food service trials or marketing strategies. Where people thought they would be most likely to purchase each of the four products tasted varied. Some products are more suited to specific retail or food service environments.

- Respondents in Alberta, Saskatchewan and Québec were more likely to have tried bison than those from BC and Ontario. Familiarity with bison appears to be positively related to the response participants had to the four bison products that they tasted. Consumers in Alberta and Saskatchewan in particular responded favourably to the bison samples.

- Nutritional content, fat and cholesterol content, availability at regular grocery store, and price relative to other meat products were identified as important by respondents and should be considerations in the development of future marketing and distribution strategies.

- There was no clear consensus on the importance people placed on convenience to prepare, novel or unique eating experiences at home or a restaurant, production methods and the appeal of a speciality meat native to North America. The existence of consumer segments to which these images might appeal requires further research.

- Respondents overall have a positive image of the bison meat industry. The industry could build on this image but to do so would need to explore in more depth the reasons for this positive image.

- Only 15% of respondents said they actually preferred the name "buffalo" over "bison" when buying the meat, however the vast majority were indifferent. The exception (for obvious language reasons) is Québec where a clear majority, 60% of respondents, favoured the name bison. Ontario was also different, with a larger proportion compared to the other locations saying they preferred the name buffalo. Informal group discussions revealed an apparent preference for the name 'bison'. In general, it appears that the name is a lot less important than the eating experience, health properties and availability of the meat.

- Respondents have an image of bison as being healthy and a unique heritage meat. These images have positive implications for marketing bison meat products.

- There is considerable disparity in respondents' perceptions of bison as "gamey" (wild) or dry tasting, and whether the animal is an endangered species. The industry needs to work on dispelling these negative images if the meat industry is to grow.

- Respondents perception of the price, healthiness, how special or unique a meal bison is and whether they prefer to eat it in a restaurant or at home is related to the type product being offered. For example, kabobs and steak have a more positive and prestigious image than a burger. Individual company marketing strategies need to be tailored to the type of product offer.

- Respondents cited availability as the most common reason they had never purchased bison meat products. Knowledge of how to cook bison was also an issue for some people.

- Laboratory market bidding results suggest that respondents are willing to pay more for bison that is verified as lower in fat content and produced without the use of growth hormones. The sensitivity of this willingness to pay to the range of lower fat content is not known at this time.

- Information on the cost of providing these attributes to consumers is required to determine the returns to the industry for delivering and promoting bison products lower in fat and produced without the use of growth hormones.

Phase One of this project has provided an initial overview of Canadian consumer attitudes towards bison in general and four bison products in particular. Further analysis of this data is ongoing and will be used to broaden our understanding of the relative competitive positioning of bison compared to other meats and to further explore consumers' willingness-to-pay.

APPENDIX A – SAMPLE DEMOGRAPHICS BY LOCATION

Saskatchewan

The Saskatchewan sample was fairly similar to the whole sample in terms of gender, number in household and income, although the proportion of people in the below $30,000 income group was higher in Saskatchewan than in the sample on average (31% versus 19%). The Saskatchewan sample had a slightly higher representation of respondents age 18 - 25 (18% vs 13%) and lower for age 46 –55 (19% vs 25%) relative to the entire sample. The Saskatchewan sample tended to be better educated, on average, relative to the full sample, with less people in the grade 9-13 education level (13% versus 26%). The Saskatchewan sample population tended to have had more experience with bison, with only 27% having never tried bison before, versus 49% for the full sample, while 19% of those in Saskatchewan had consumed bison more than 5 times in the past, compared with 8% in the full sample. A similar proportion of Saskatchewan respondents had reduced their consumption of fat and cholesterol for health related reasons (30% versus 39%).

Figure A1: Saskatchewan Sample – Gender

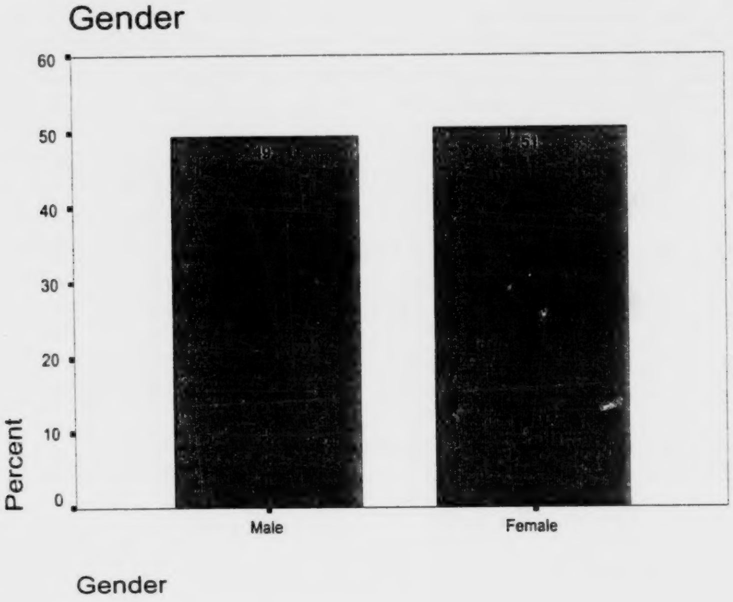


Figure A2: Saskatchewan Sample – Age

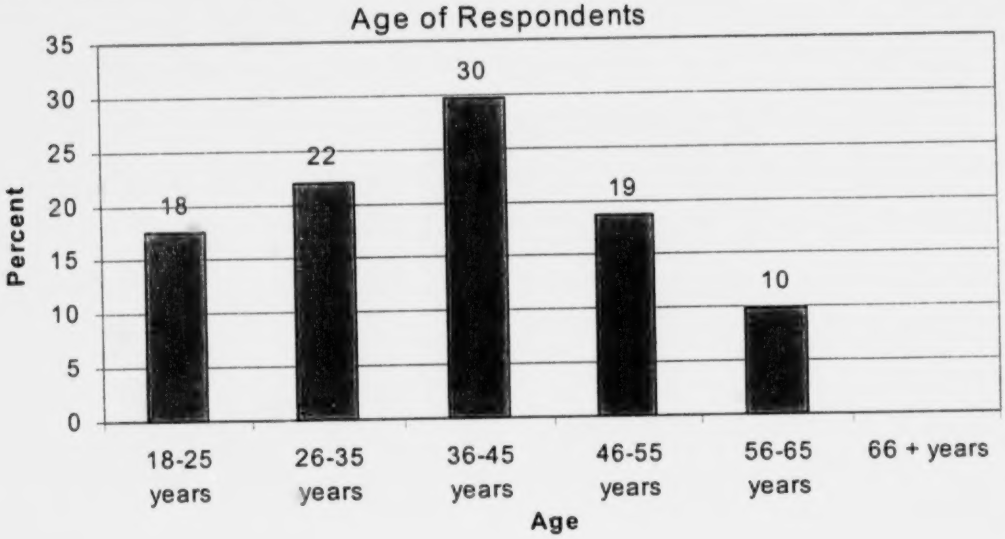
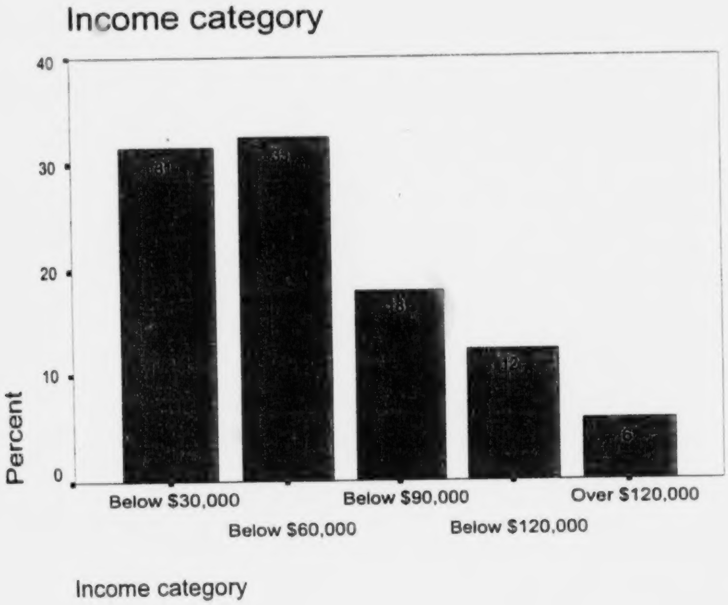


Figure A3: Saskatchewan Sample – Income



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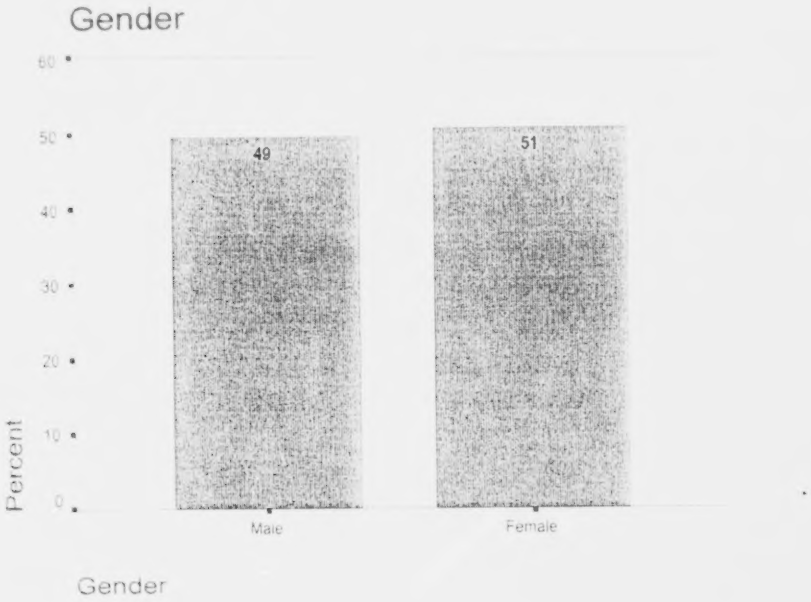

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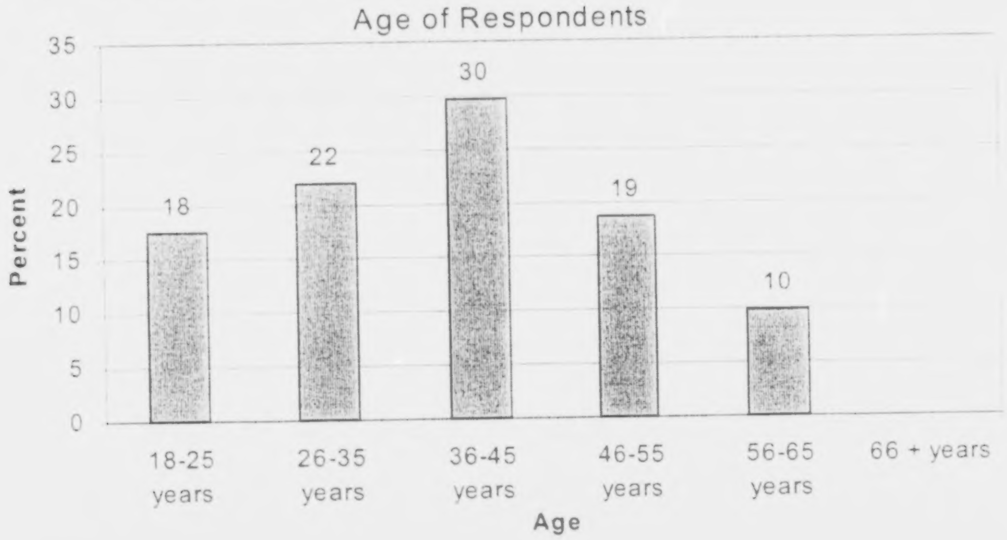


Figure A3: Saskatchewan Sample – Income

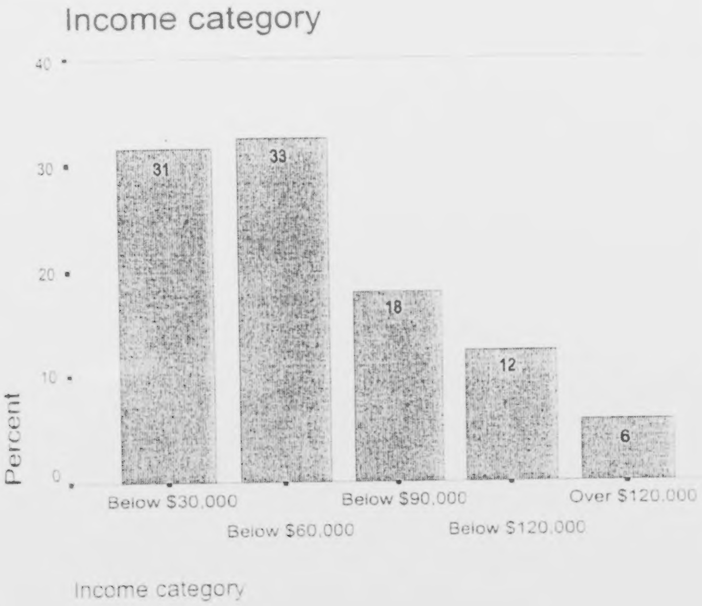


Figure A4: Saskatchewan Sample – Number in Household

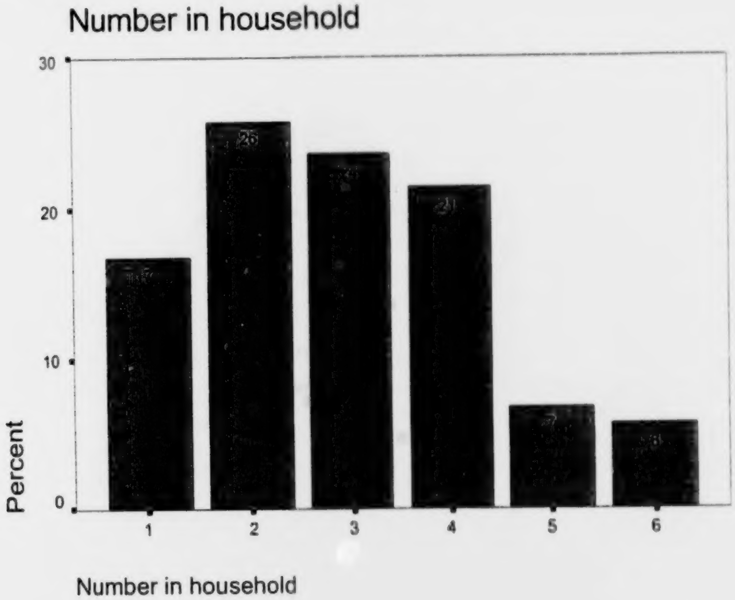


Figure A5: Saskatchewan Sample – Education

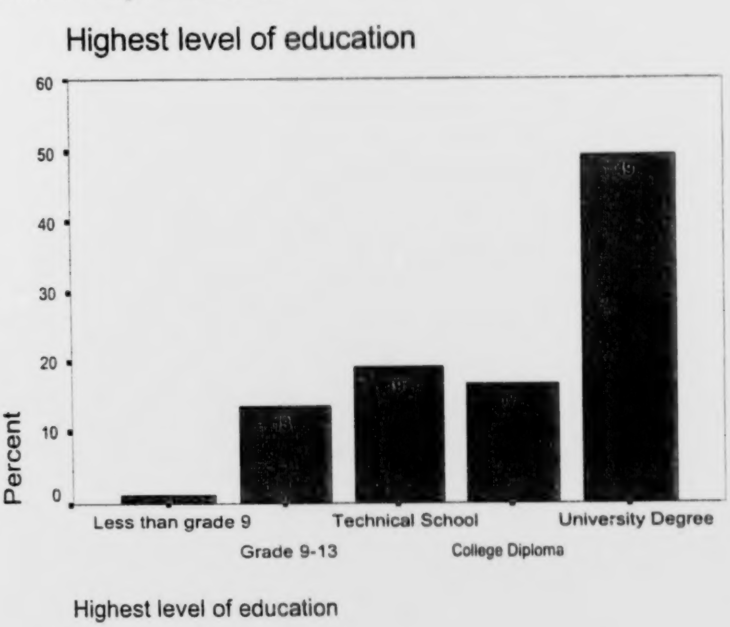


Figure A6: Saskatchewan Sample –Health-Related Diet Decisions

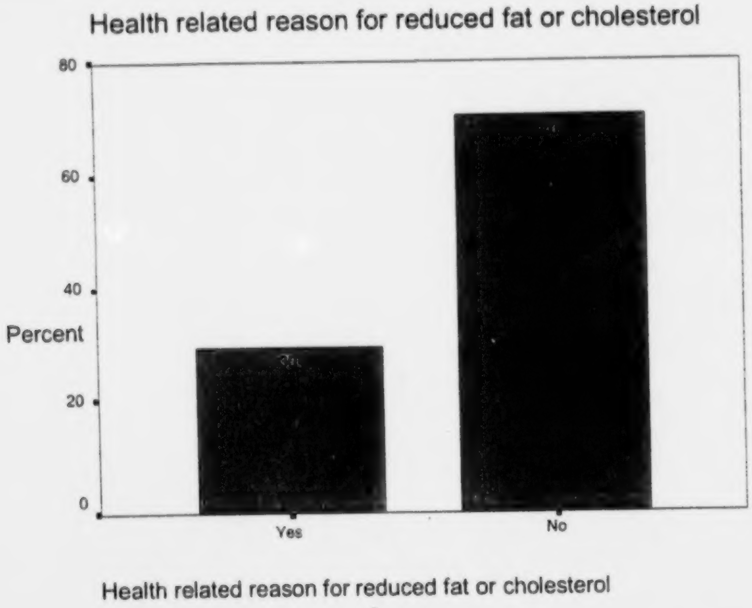
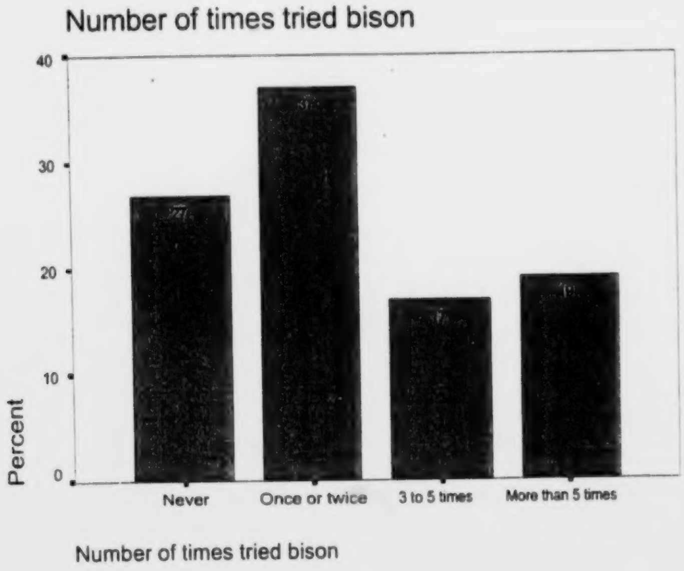


Figure A7: Saskatchewan Sample – Number of Times Tried Bison



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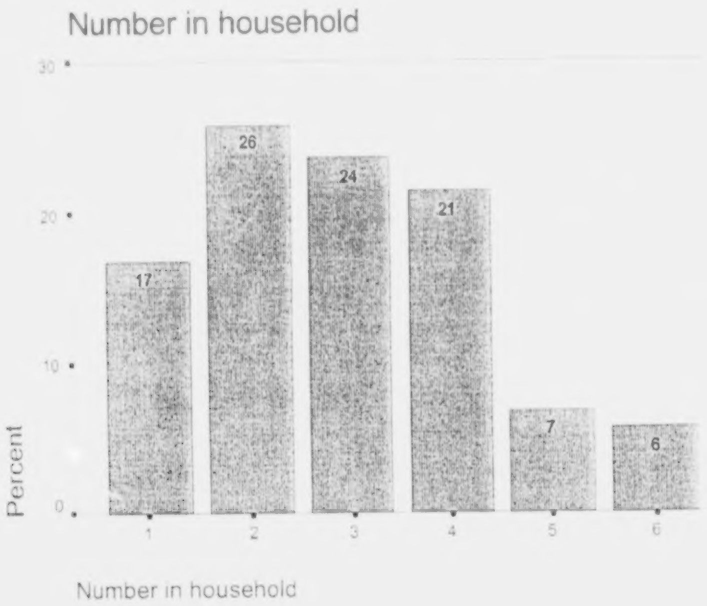
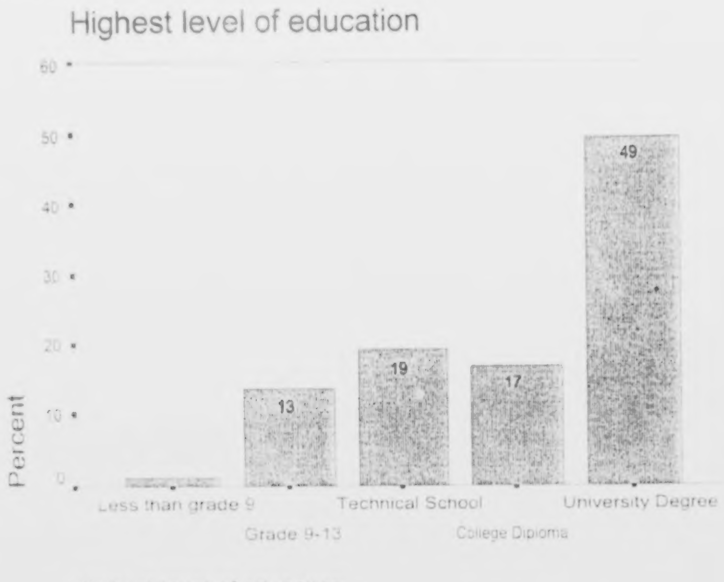


Figure A5: Saskatchewan Sample – Education



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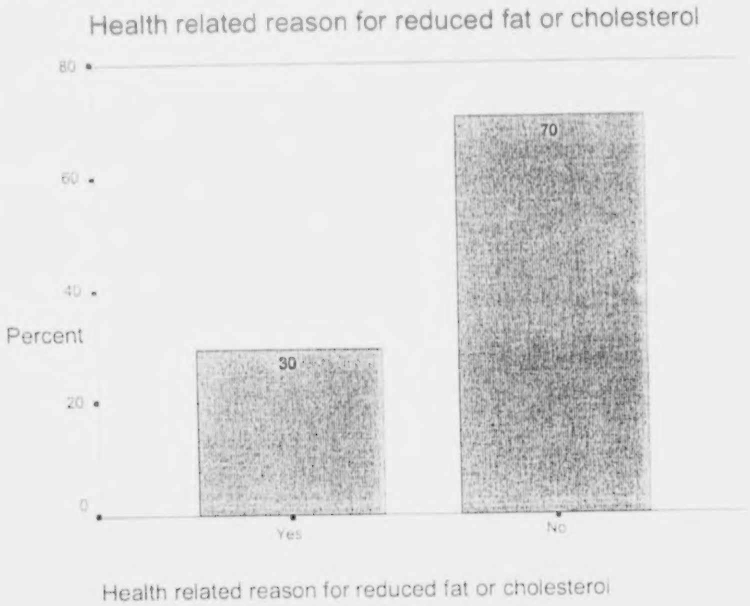

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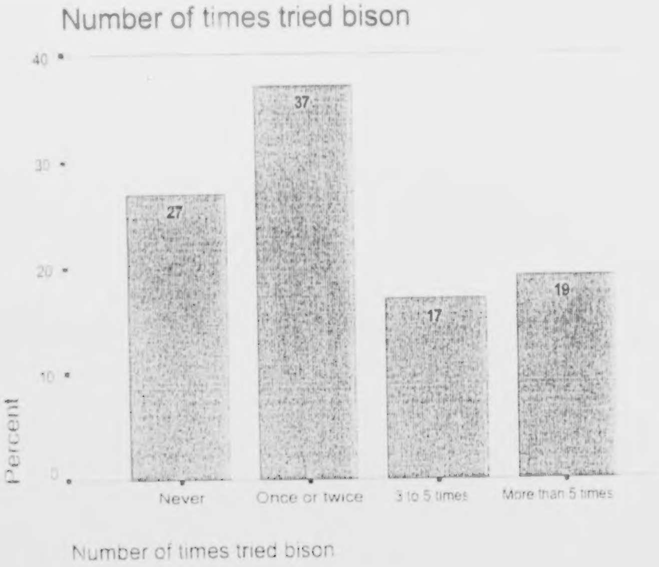


Alberta

Compared to the full sample, the Alberta sample had a slightly higher proportion of women (62% versus 55%), a higher proportion of two-person households (42% Vs. 31%) and a lower proportion of four person households (18% Vs. 25%). The distribution of income levels and education levels in Alberta were comparable to that of the full sample. The respondents tended to be slightly older at this location relative to the whole sample with 55% of respondents over 45 years of age compared with 42% of the entire sample population. A similar proportion of the sample had reduced their consumption of fat or cholesterol for health related reasons (44% versus 39%), while they were more likely to have tried bison before (29% of those in Alberta had never tried bison before, versus 49% of the full sample).

Figure A8: Alberta Sample – Gender

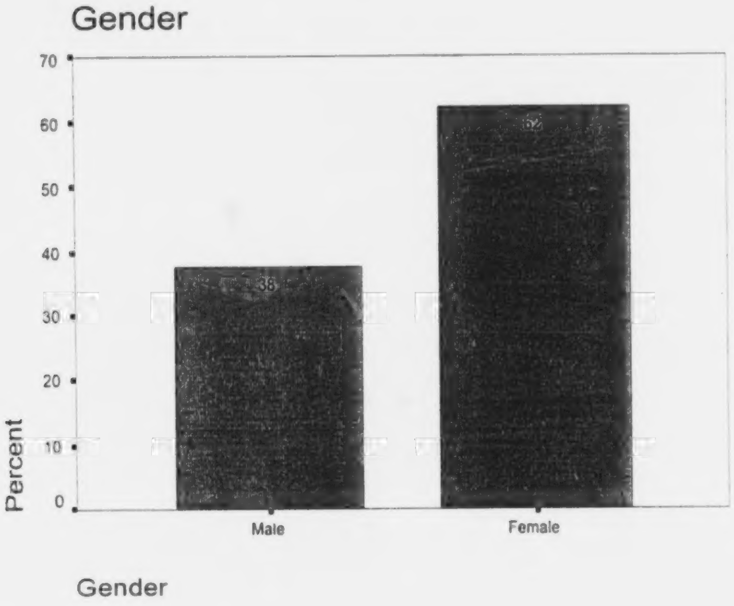


Figure A9: Alberta Sample – Age

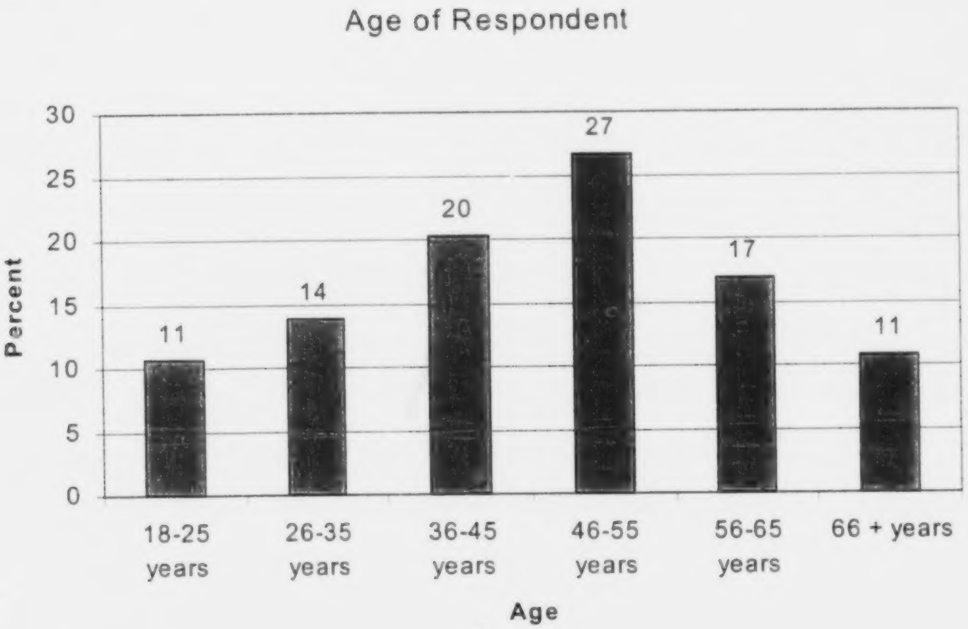
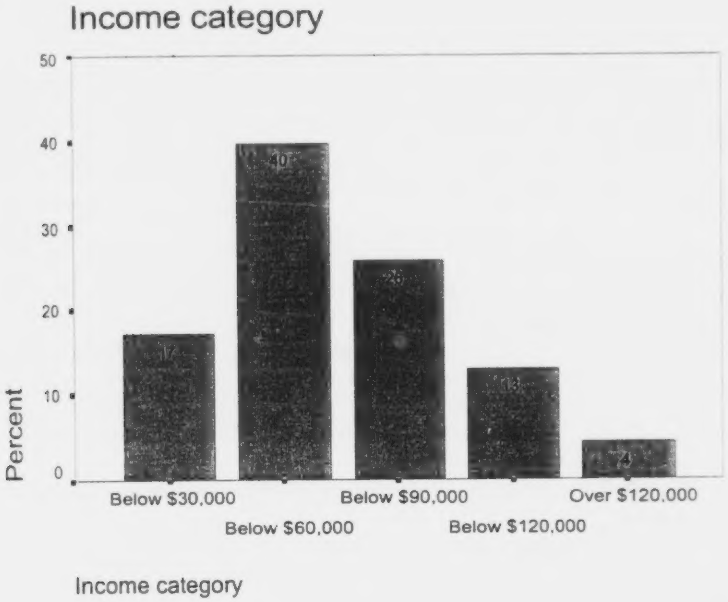


Figure A10: Alberta Sample – Income



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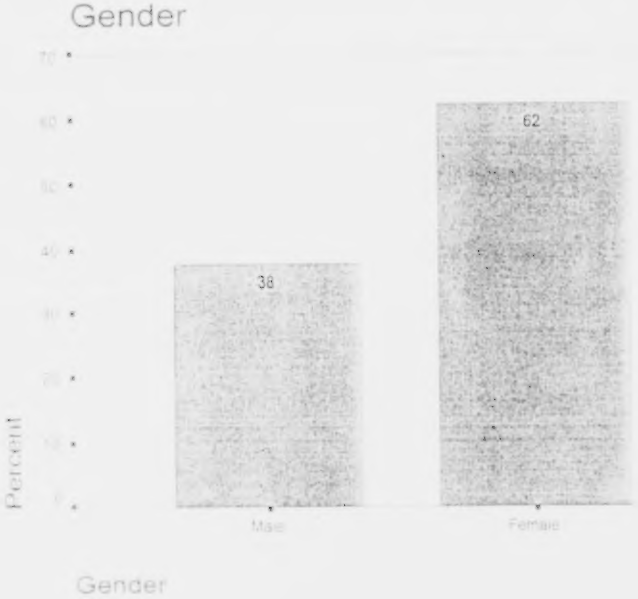


Figure A9: Alberta Sample – Age

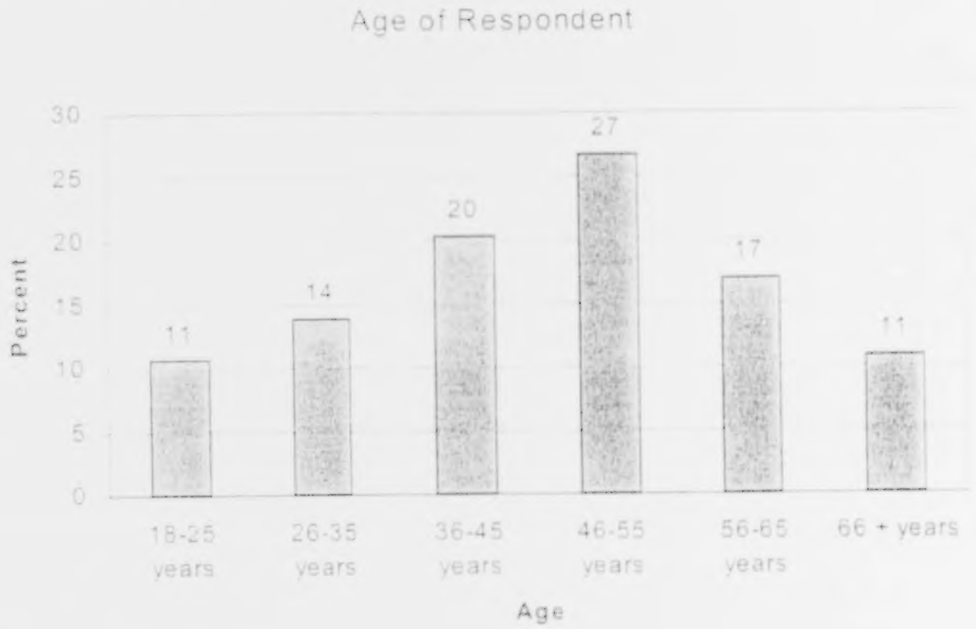


Figure A10: Alberta Sample – Income

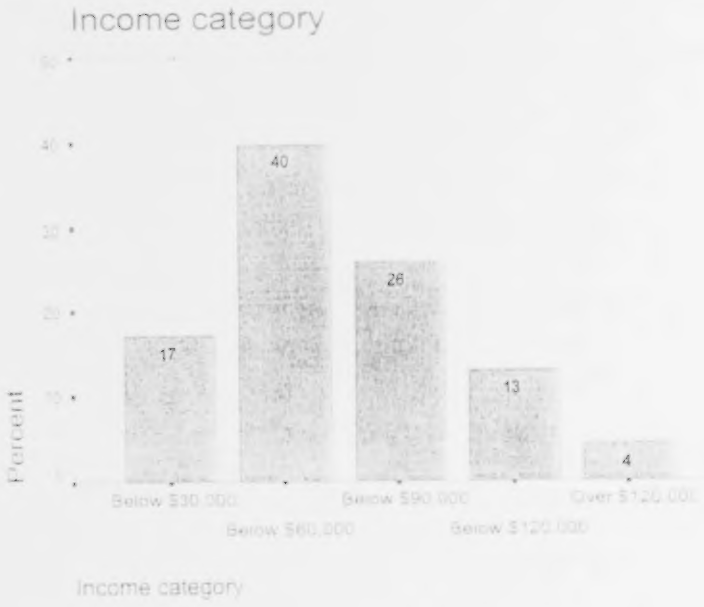


Figure A11: Alberta Sample – Number in Household

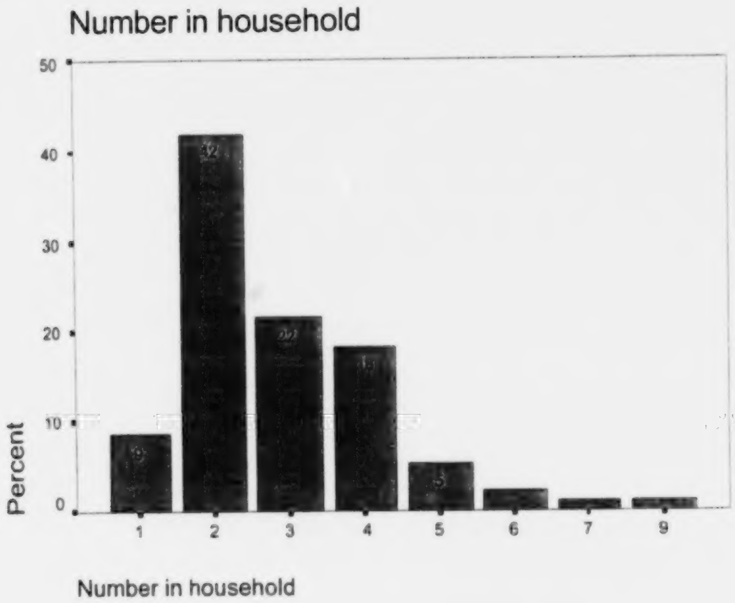


Figure A12: Alberta Sample – Education

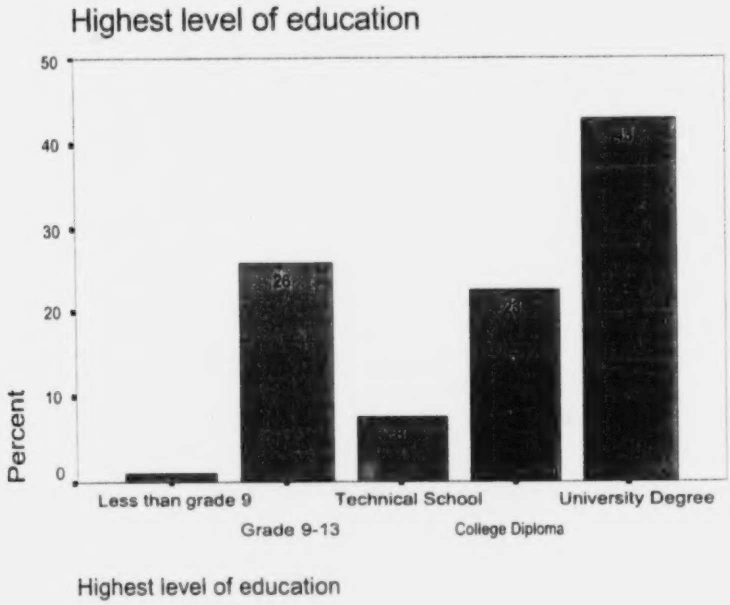


Figure A13: Alberta Sample –Health-Related Diet Decisions

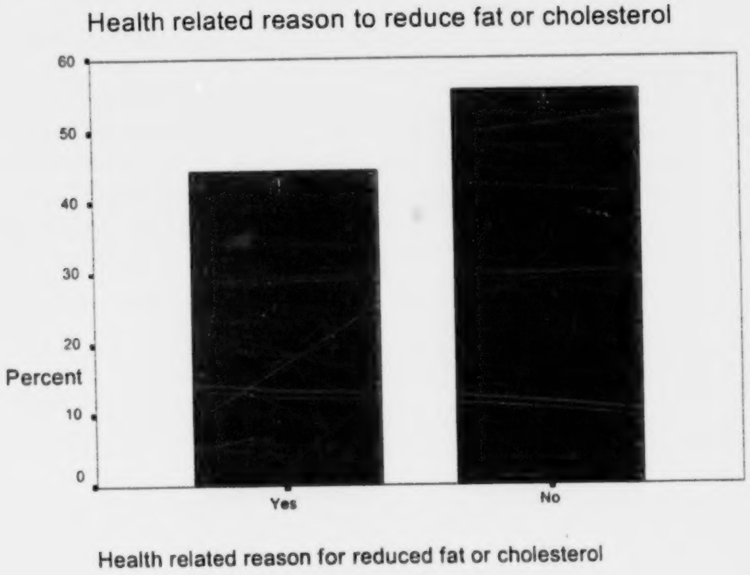


Figure A14: Alberta Sample – Number of Times Tried Bison

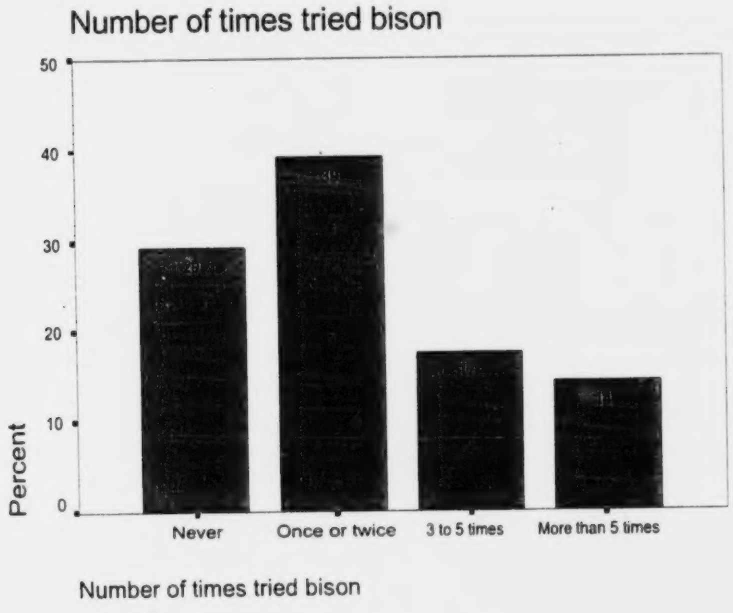


Figure A11: Alberta Sample – Number in Household

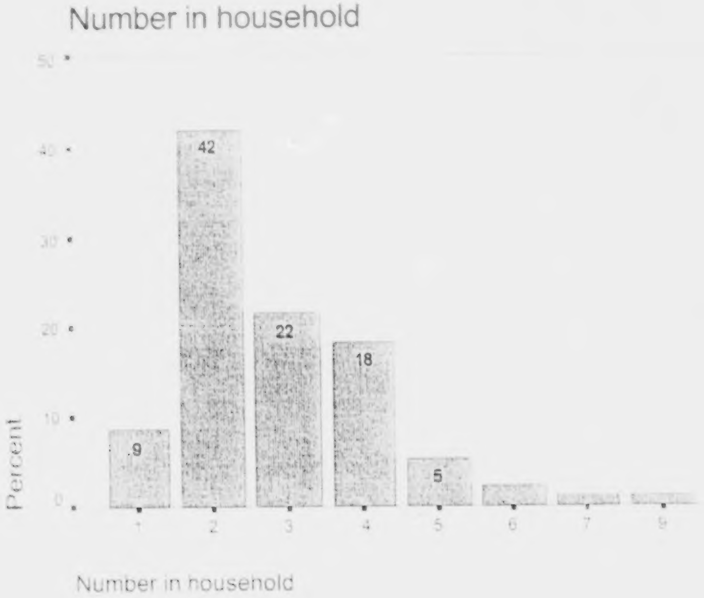


Figure A12: Alberta Sample – Education

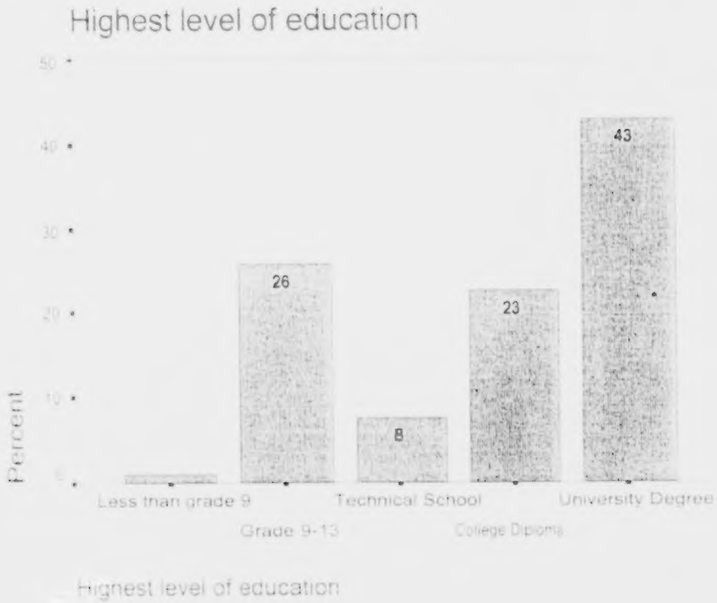


Figure A13: Alberta Sample –Health-Related Diet Decisions

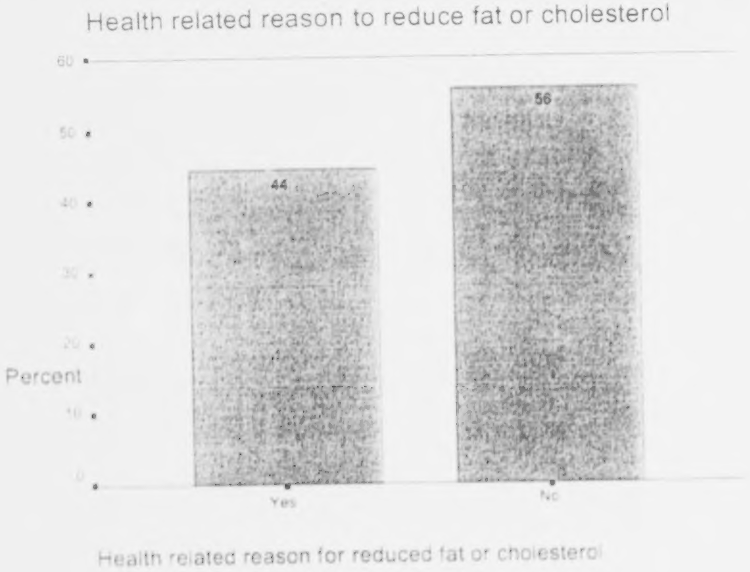
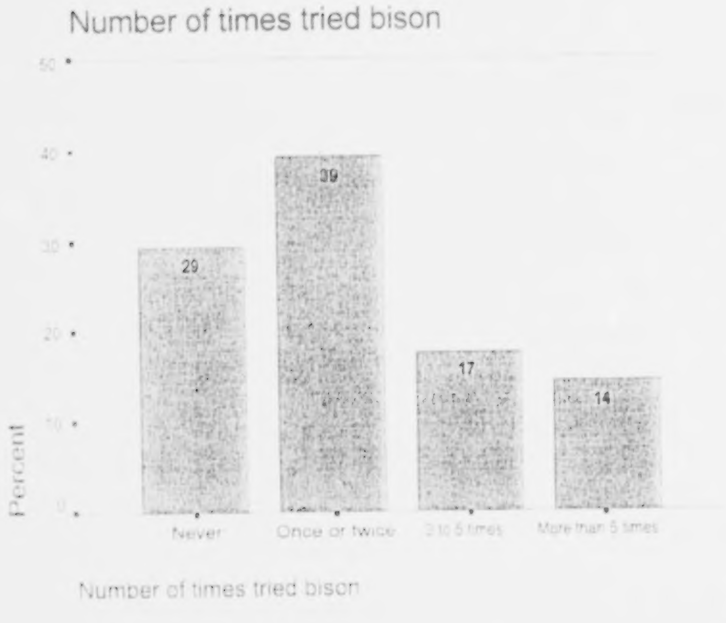


Figure A14: Alberta Sample – Number of Times Tried Bison



BC

A higher proportion of BC respondents were women (65% versus 55%), while income levels were fairly similar to the spread across the full sample. Respondents in BC tended to have lower education levels on average, with 41% having grade 9-13 education and 28% having a university degree, compared with 26% and 41% respectively in the full sample. The age distribution of BC respondents was very close to that of the entire sample. Household size, along with the number of people altering their meat consumption due to health reasons were similar to the full sample. BC contained the highest proportion of respondents who had not previously tried bison (69% versus 49% in the full sample).

Figure A15: BC Sample – Gender

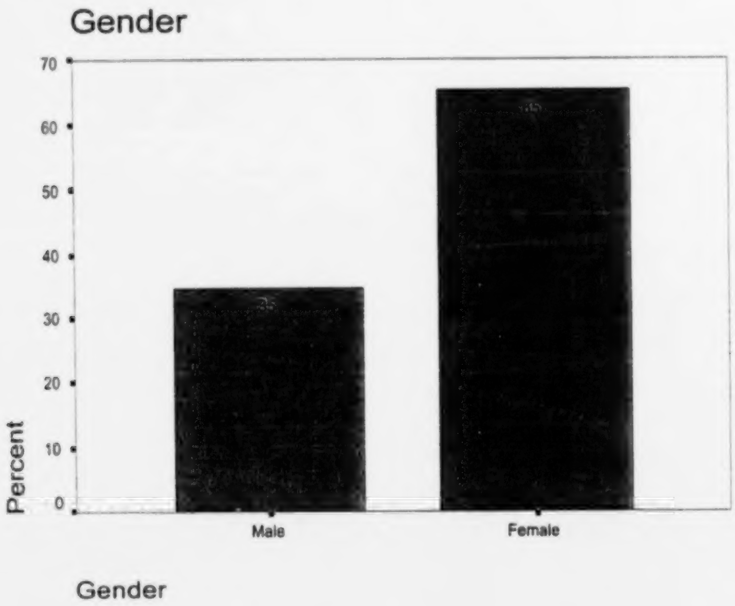


Figure A16: BC Sample – Age

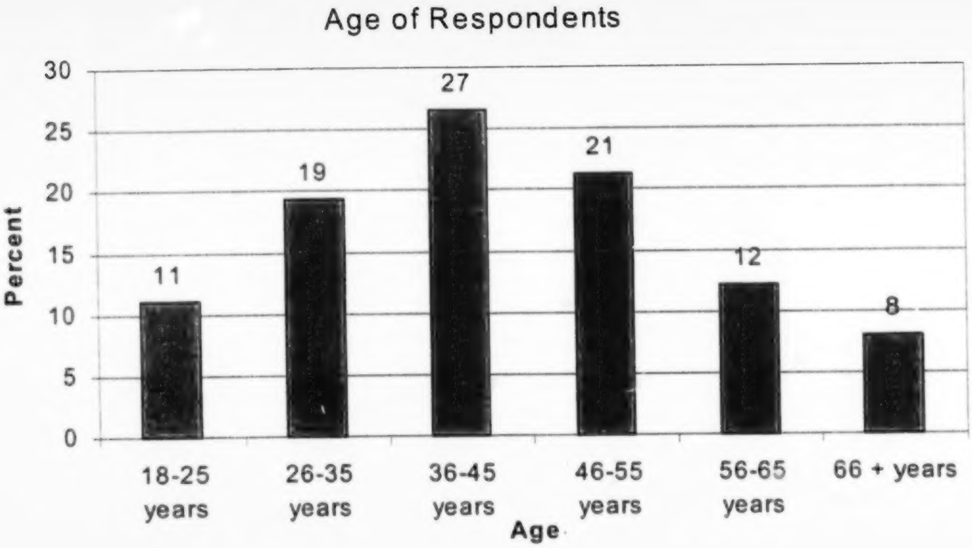


Figure A17: BC Sample – Income

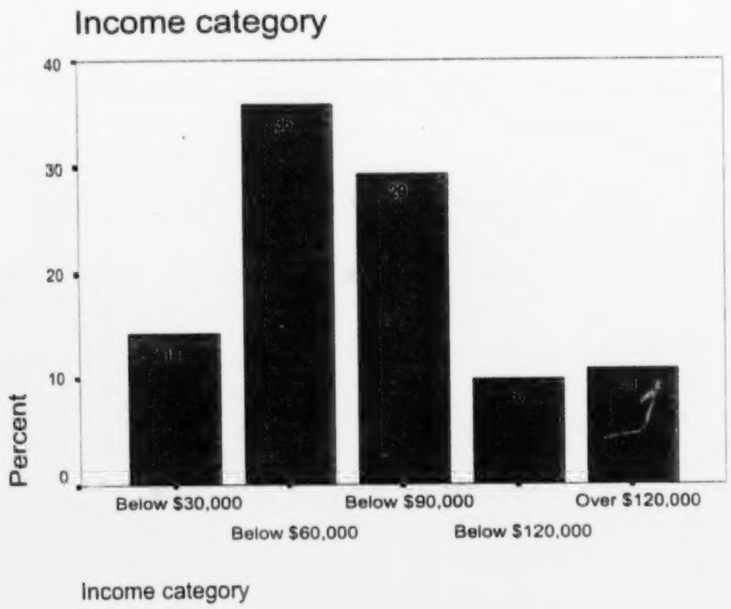


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Figure A15: BC Sample – Gender

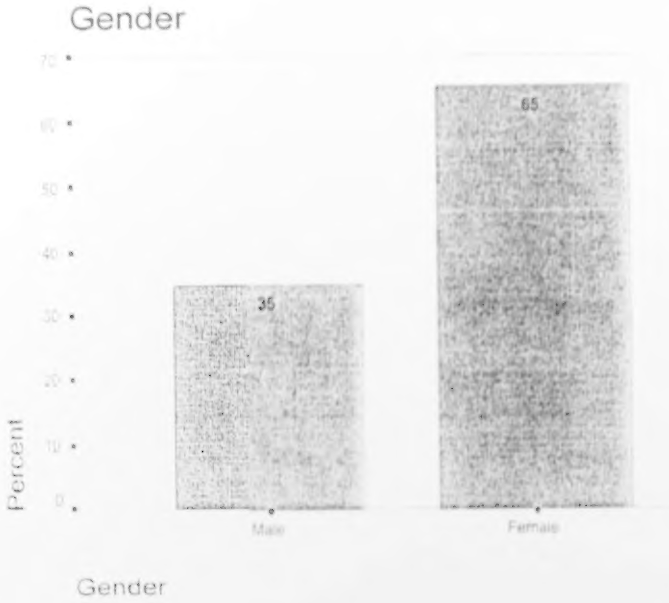


Figure A16: BC Sample – Age

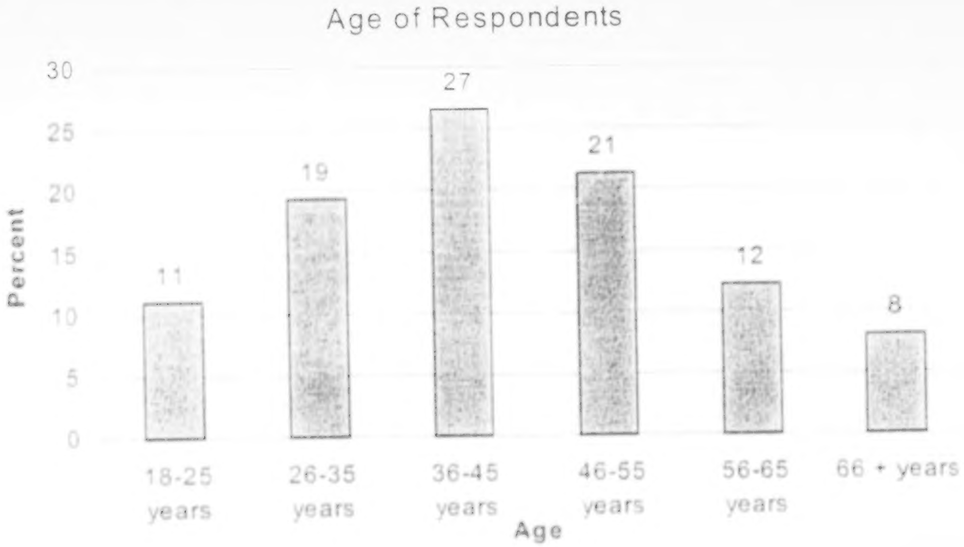


Figure A17: BC Sample – Income

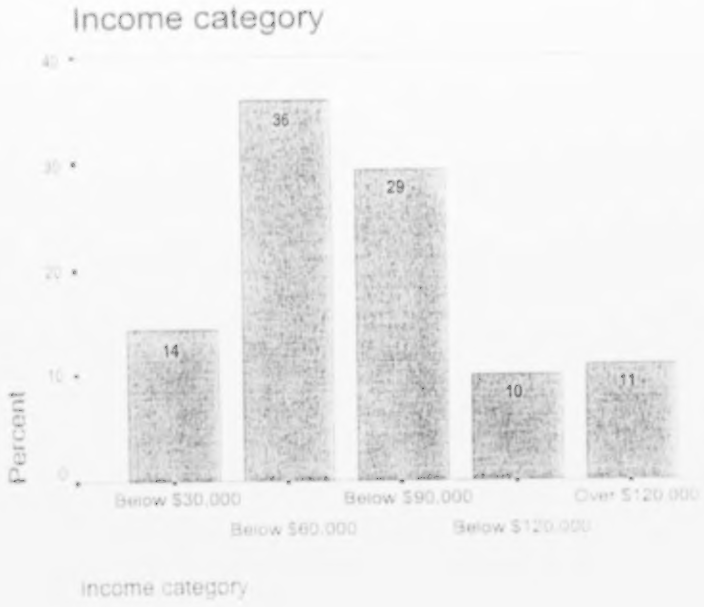


Figure A18: BC Sample – Number in Household

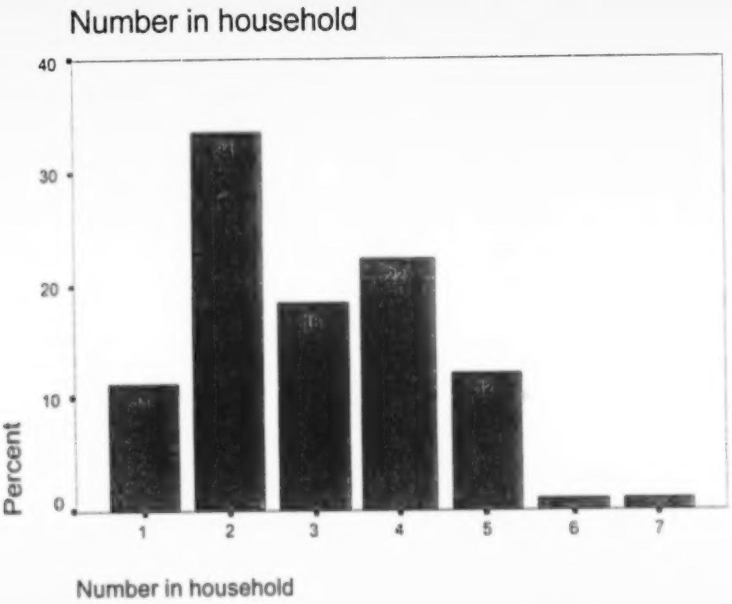


Figure A19: BC Sample – Education

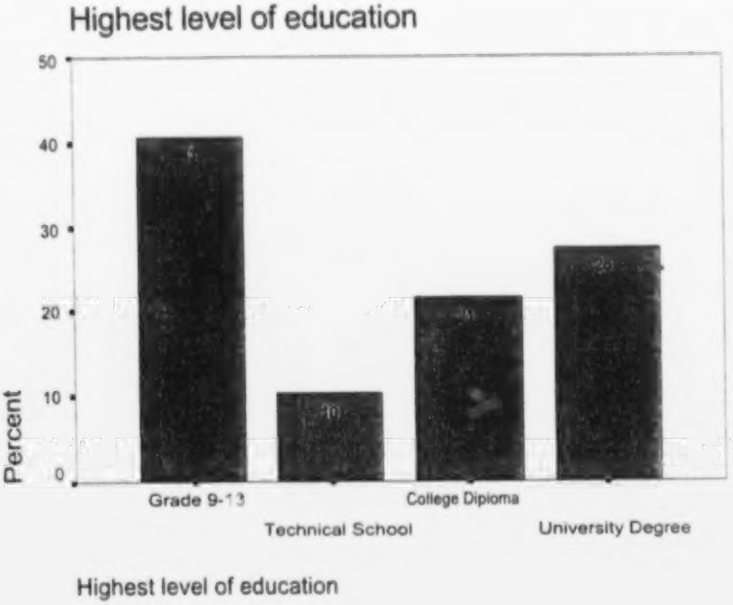


Figure A20: BC Sample –Health-Related Diet Decisions

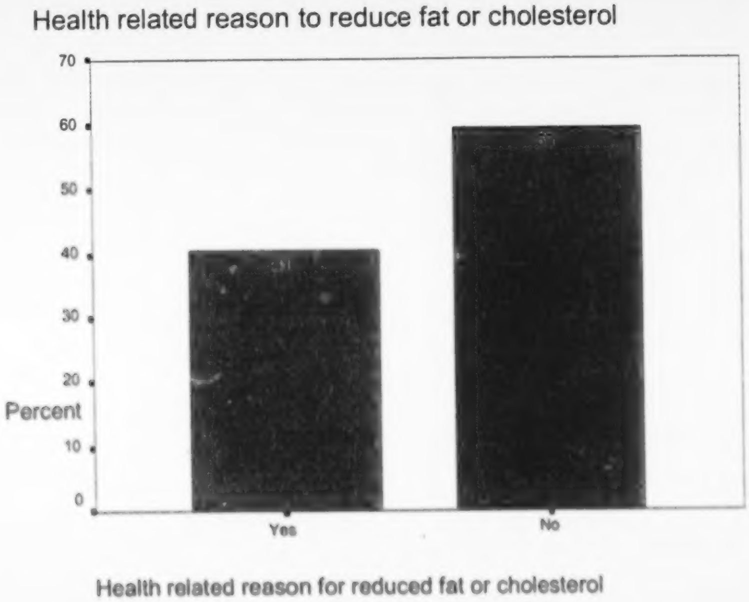


Figure A21: BC Sample – Number of Times Tried Bison

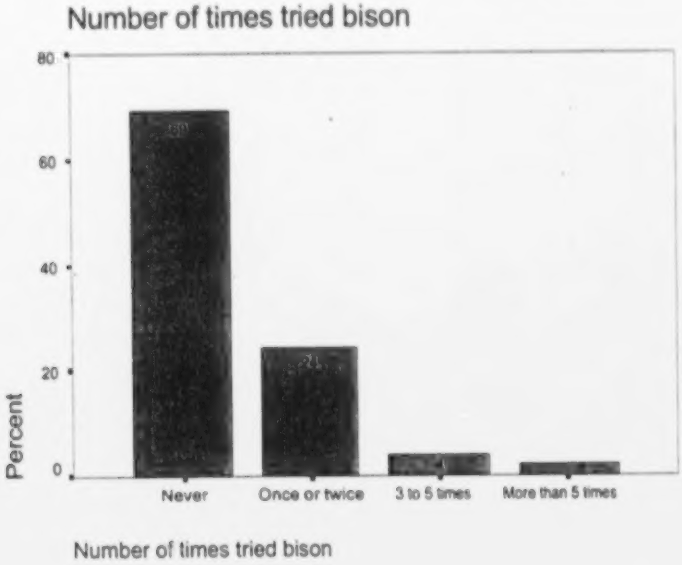


Figure A18: BC Sample – Number in Household

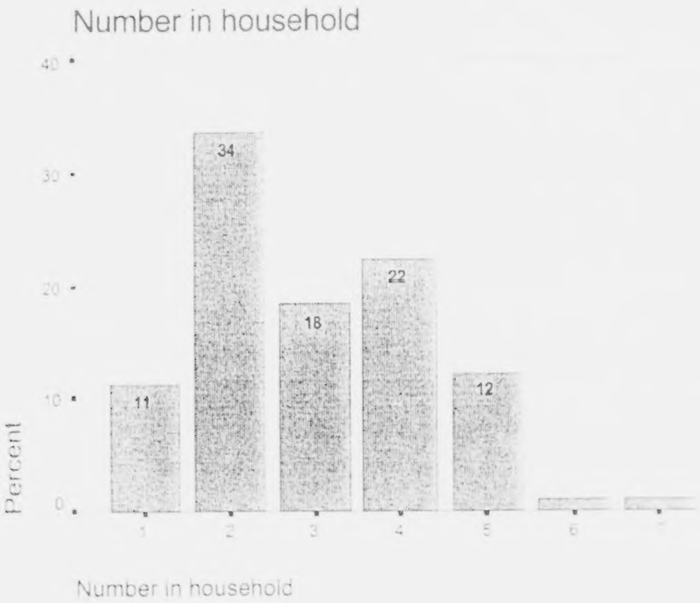


Figure A19: BC Sample – Education

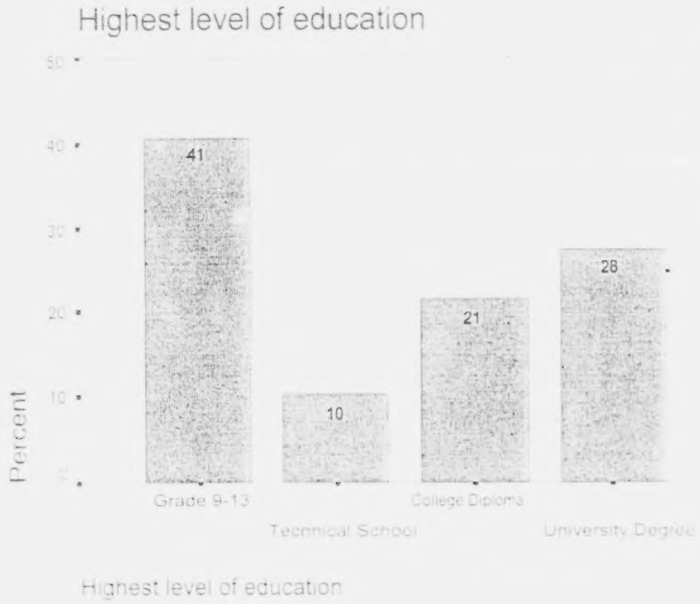


Figure A20: BC Sample –Health-Related Diet Decisions

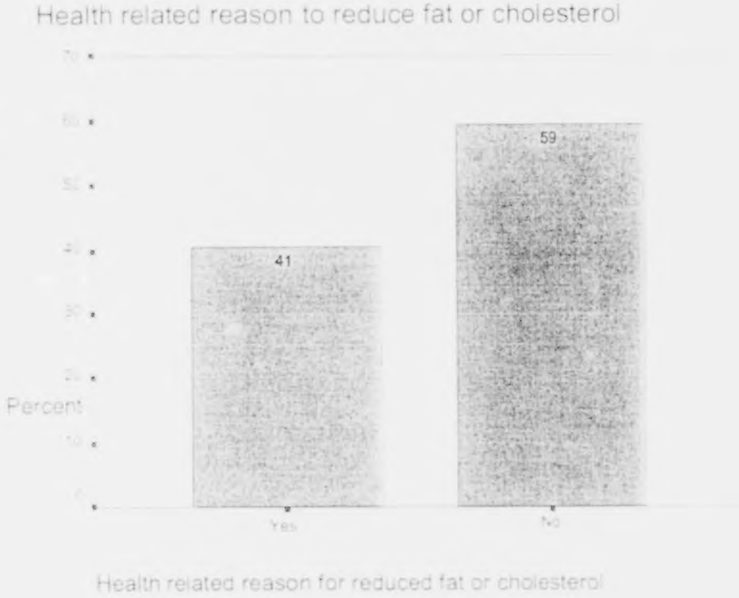
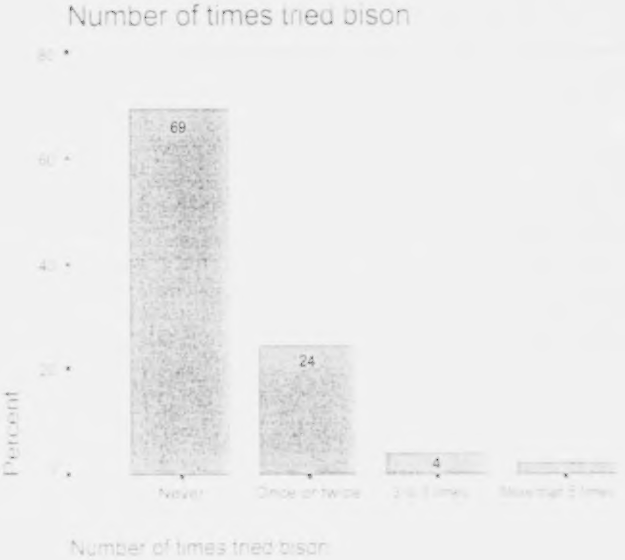


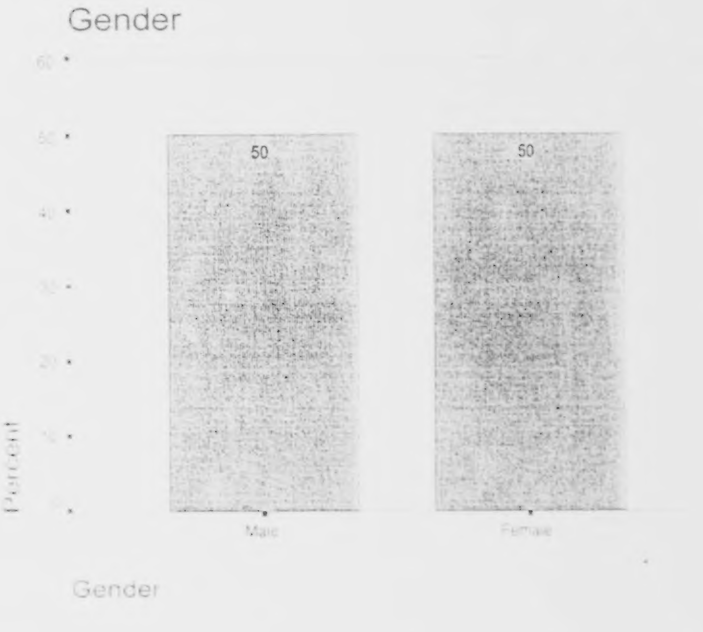
Figure A21: BC Sample – Number of Times Tried Bison



Ontario

The Ontario sample was split evenly between men and women. Relative to the full sample, Ontario had a slightly higher proportion of people with grade 9-13 education (33% Vs. 26%) and fewer people with a university degree (32% Vs. 41%). Income levels tended to be higher, on average, in the Ontario sample, for example, 26% had incomes in the $90-$120K range, compared with 15% in the full sample. With respect to age, the Ontario sample had more respondents age 26-35 years (26% Vs 19%) and fewer respondents age 18-25years (8% Vs 13%) relative to the entire sample. The Ontario sample had a higher proportion of four-person households (41% Vs. 25%) and a lower proportion of 1 and 2 person households (31% Vs. 43%) compared to the full sample. The tendency to have reduced fat and cholesterol consumption was similar in Ontario (43% versus 39%). A relatively high proportion of Ontario respondents had not tried bison before (67% versus 49% for the full sample).

Figure A22: Ontario Sample – Gender



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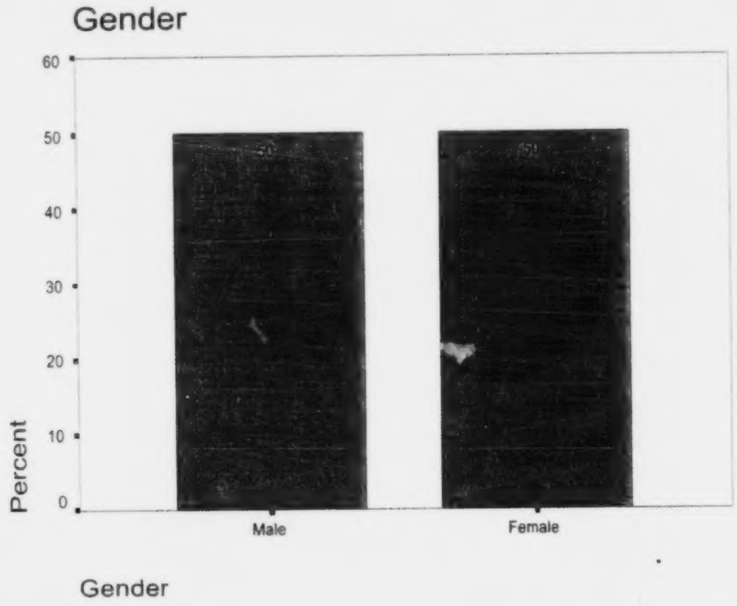


Figure A23: Ontario Sample – Age

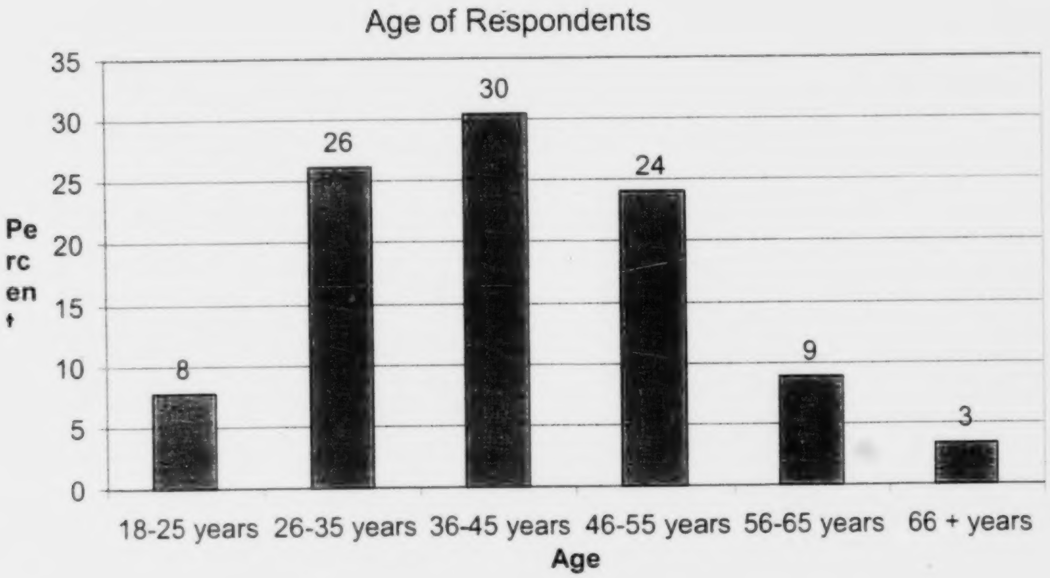


Figure A24: Ontario Sample – Income

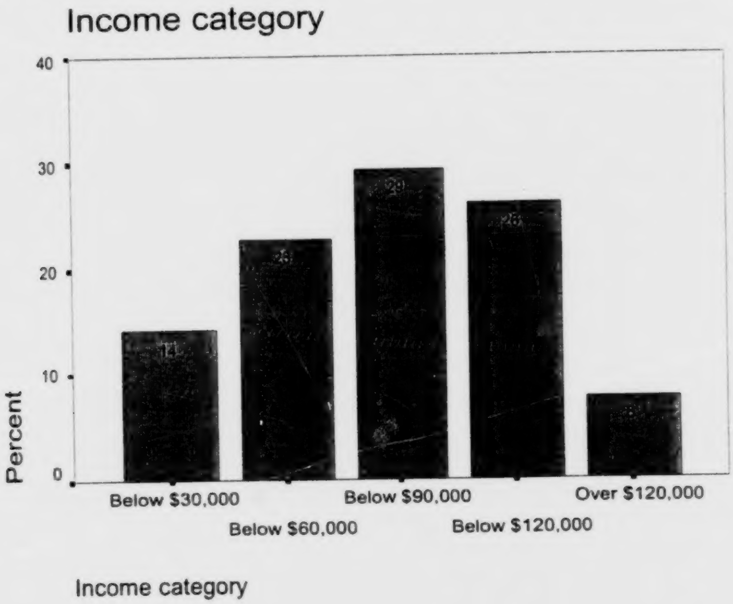


Figure A25: BC Sample – Number in Household

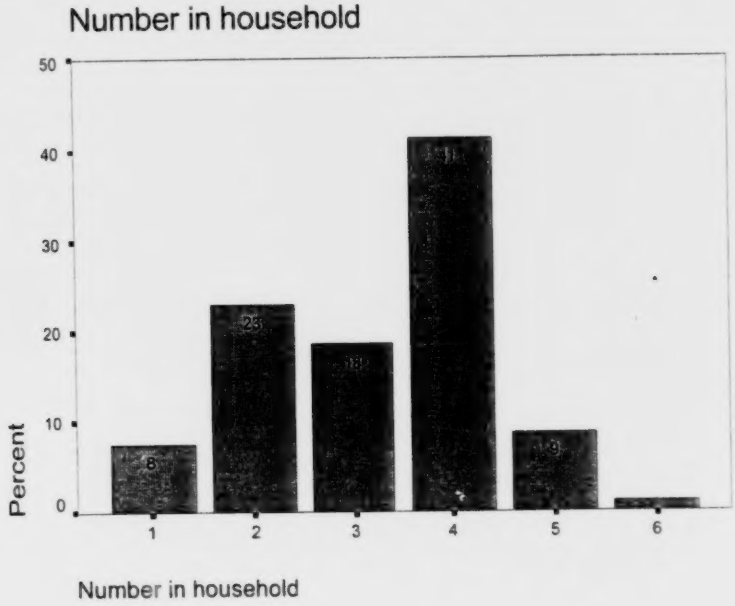


Figure A26: Ontario Sample – Education

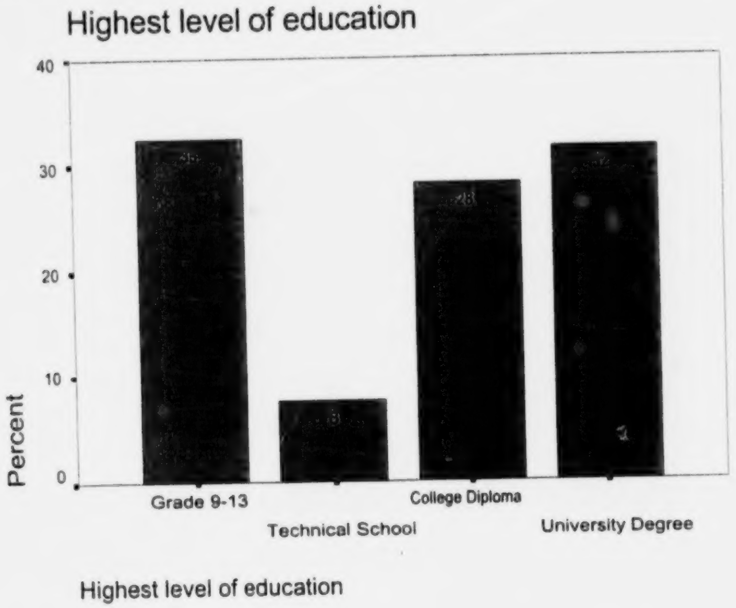


Figure A27: Ontario Sample –Health-Related Diet Decisions

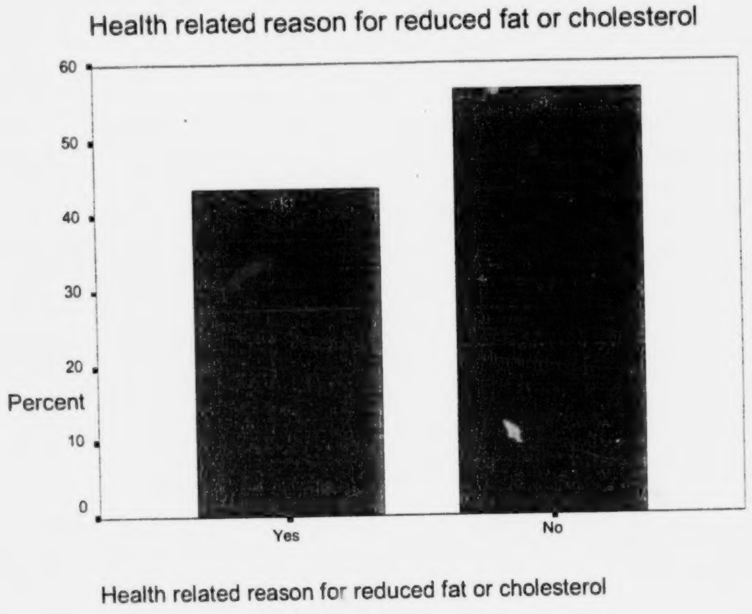


Figure A24: Ontario Sample – Income

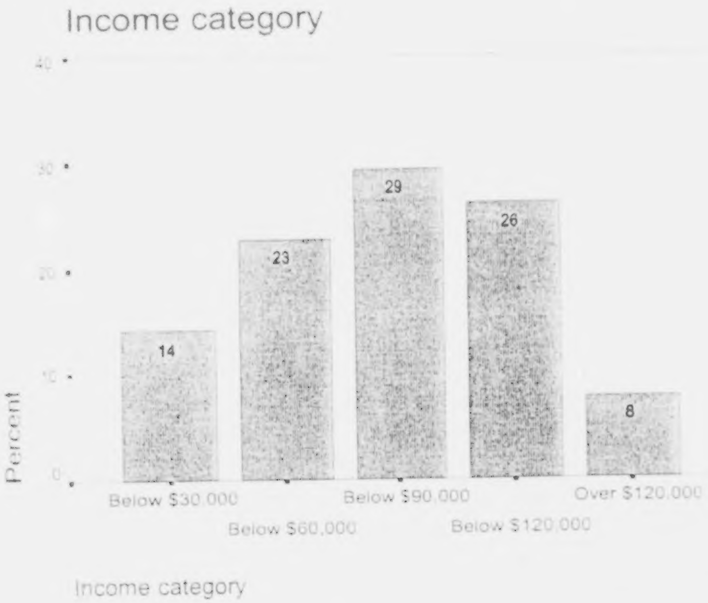


Figure A25: BC Sample – Number in Household

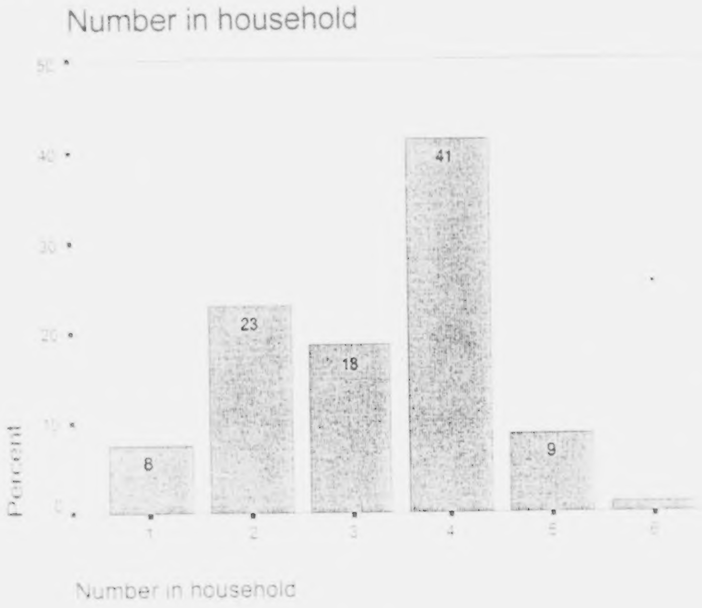
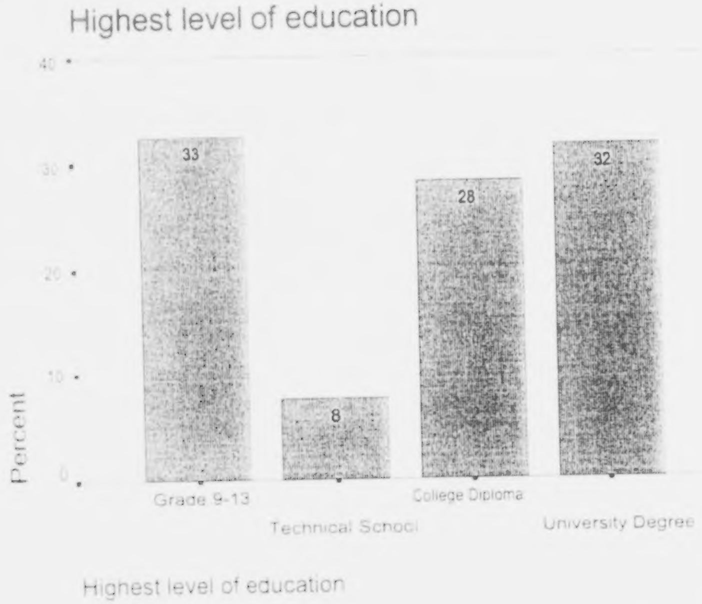


Figure A26: Ontario Sample – Education



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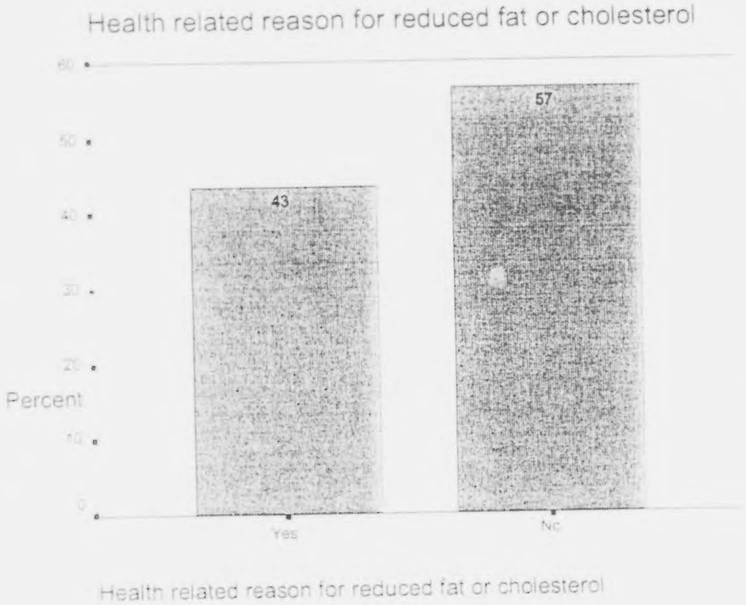
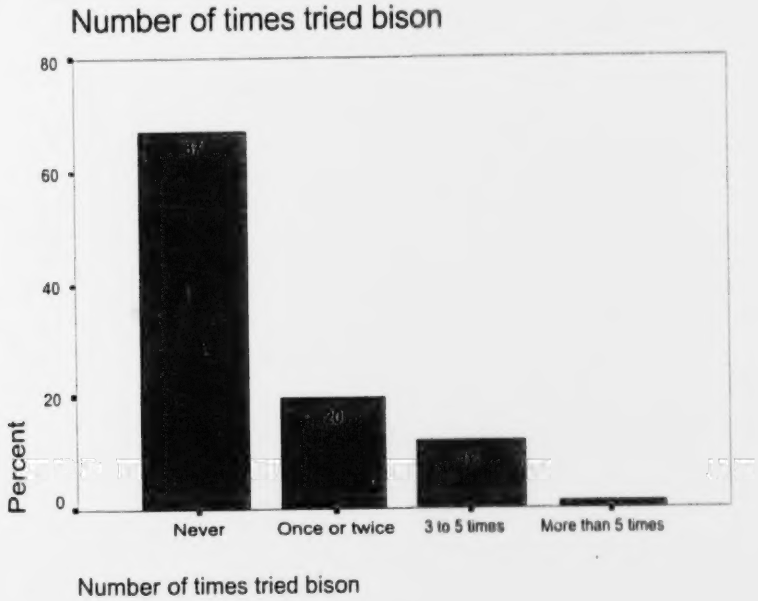


Figure A28: Ontario Sample – Number of Times Tried Bison



Québec

Québec was the only location in which the number of male respondents (56%) exceeded the number of female. Education levels tended to be higher in the Québec sample, with 56% of respondents having at least a university degree, versus 41% for the full sample. The distribution of income levels, however, was markedly similar to that of the full sample, as was the distribution of household size. The Québec sample had a higher percentage of respondents age 46 to 55 compared to the entire sample (34% Vs 25%) and fewer in the 26 to 35 age group relative to the whole sample (12% Vs 19%). None of the Québec respondents were over the age of 65. A slightly lower proportion of them had reduced fat or cholesterol consumption for health related reasons, although the difference with the full sample is small (36% versus 39%). Prior experience with bison was similar to the sample average, with 52% of Québec respondents never having tried bison before, versus 49% of the full sample, while 10% had tried bison more than 3 times, compared with 19% in the full sample.

Figure A29: Québec Sample – Gender

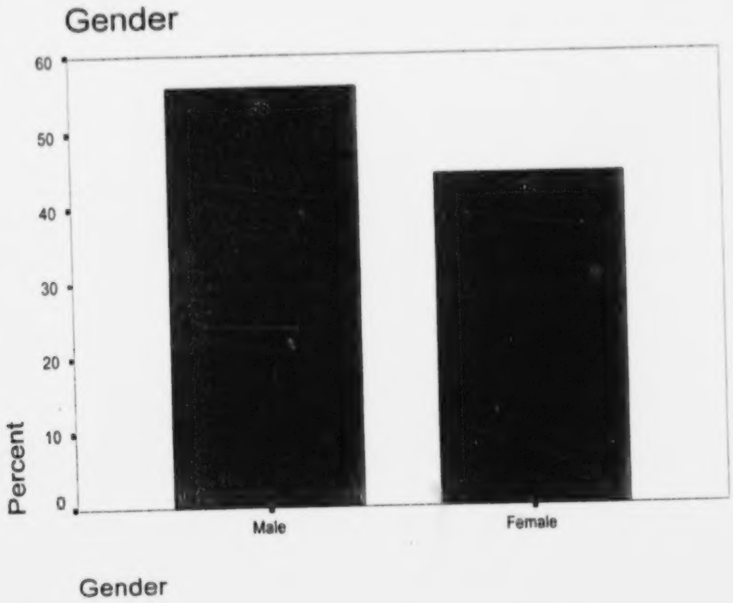


Figure A30: Québec Sample – Age

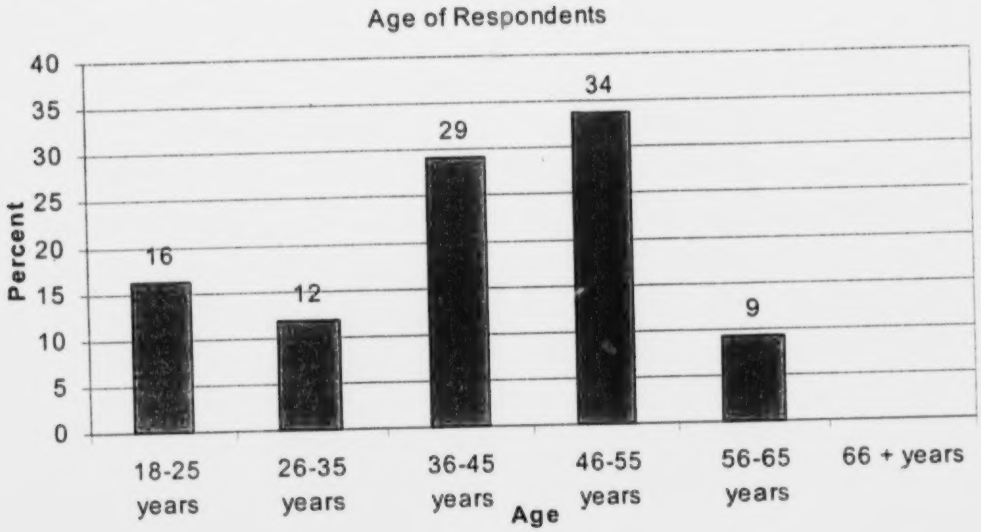
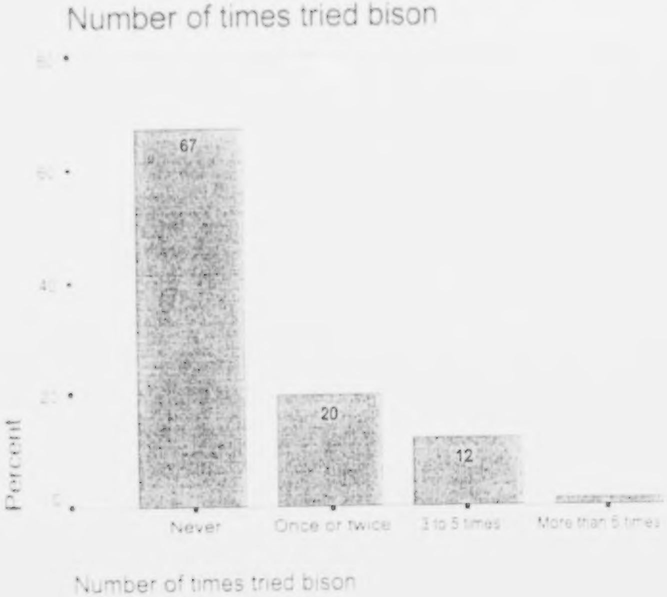


Figure A28: Ontario Sample – Number of Times Tried Bison



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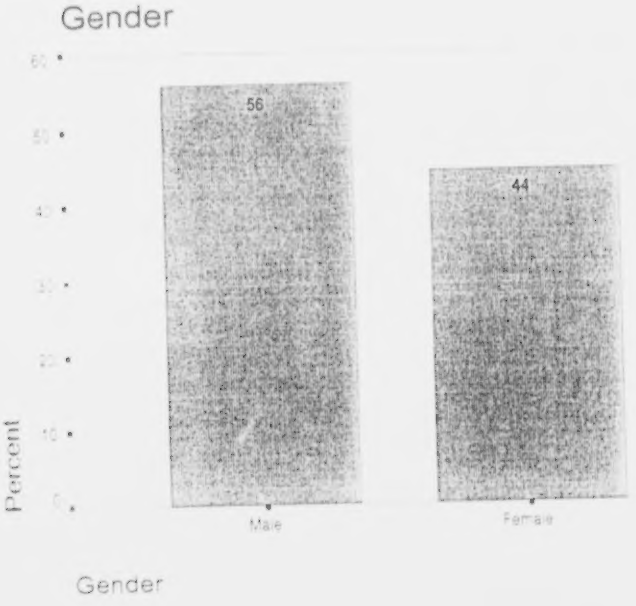


Figure A30: Québec Sample – Age

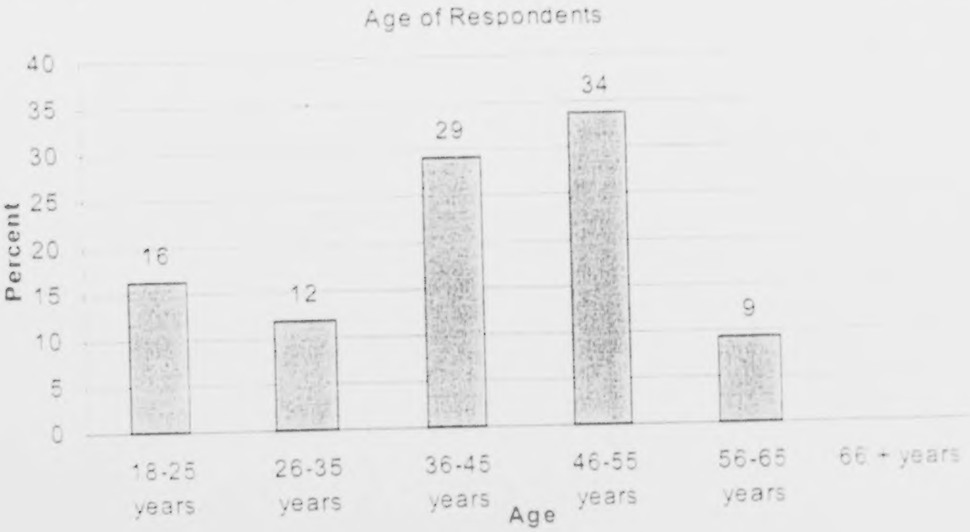


Figure A31: Québec Sample – Income

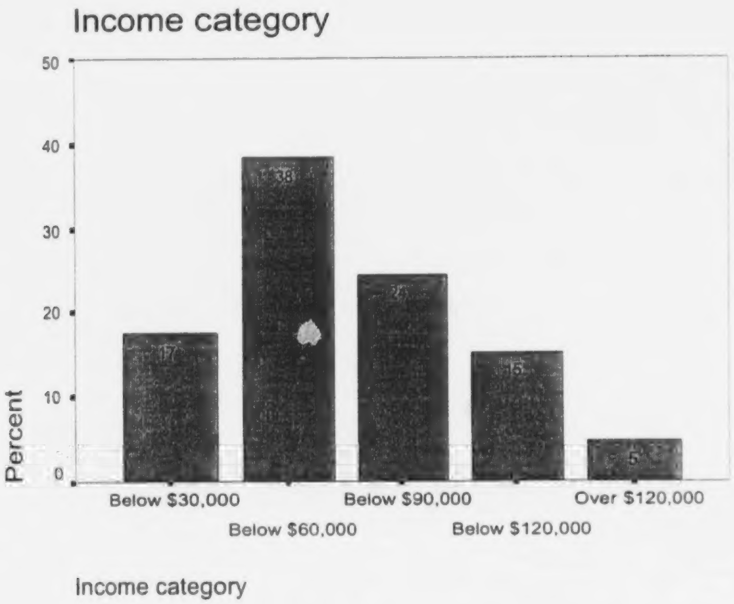


Figure A32: Quebéc Sample – Number in Household

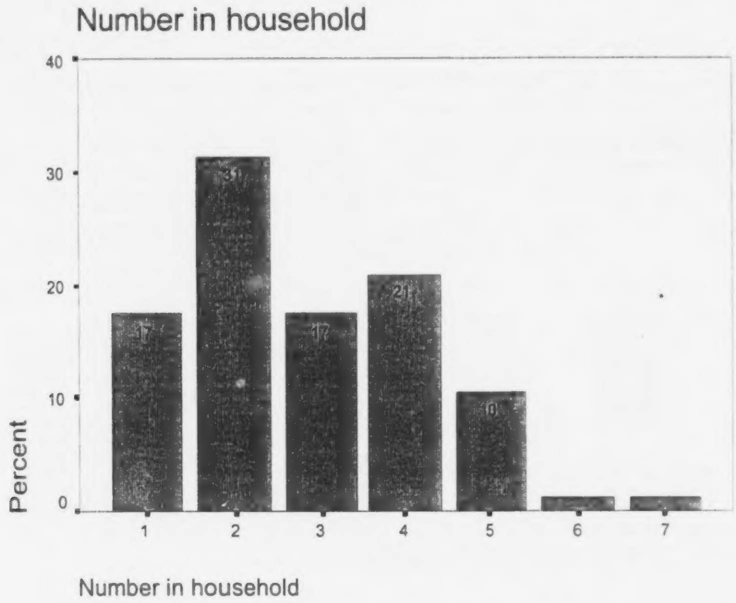


Figure A33: Québec Sample – Education

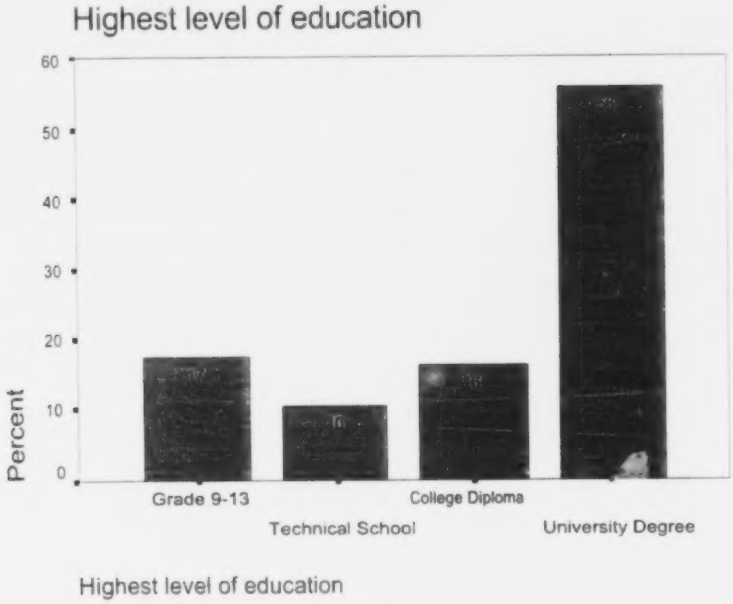
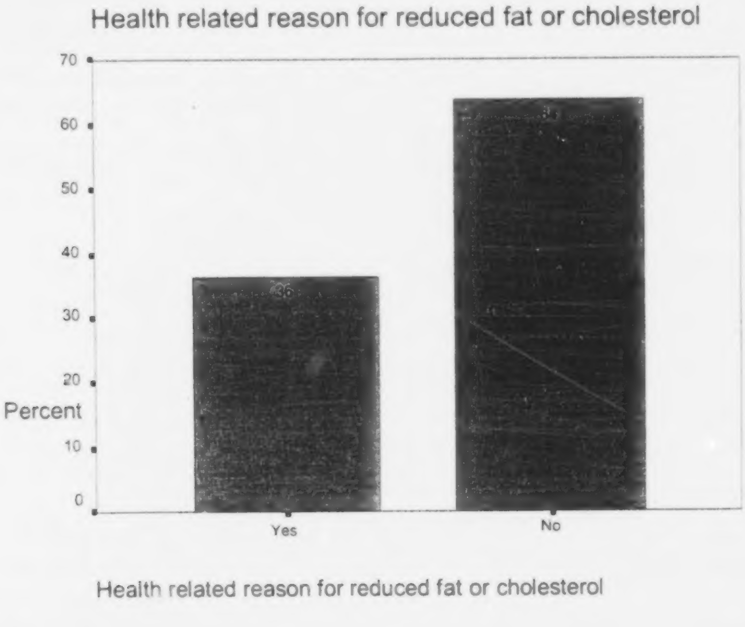


Figure A34: Québec Sample –Health-Related Diet Decisions



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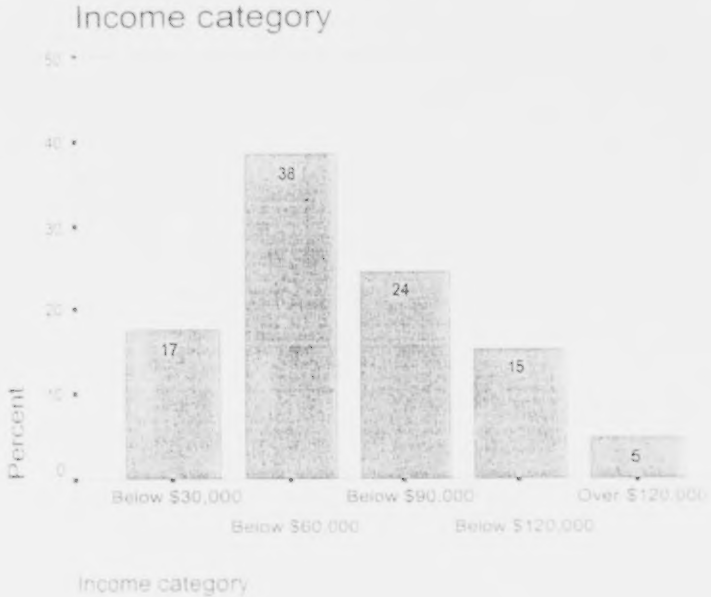


Figure A32: Quebec Sample – Number in Household

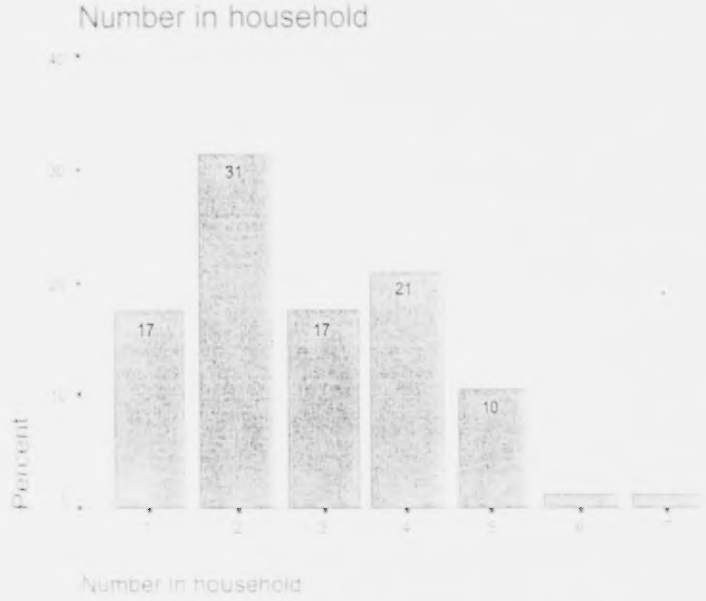


Figure A33: Québec Sample – Education

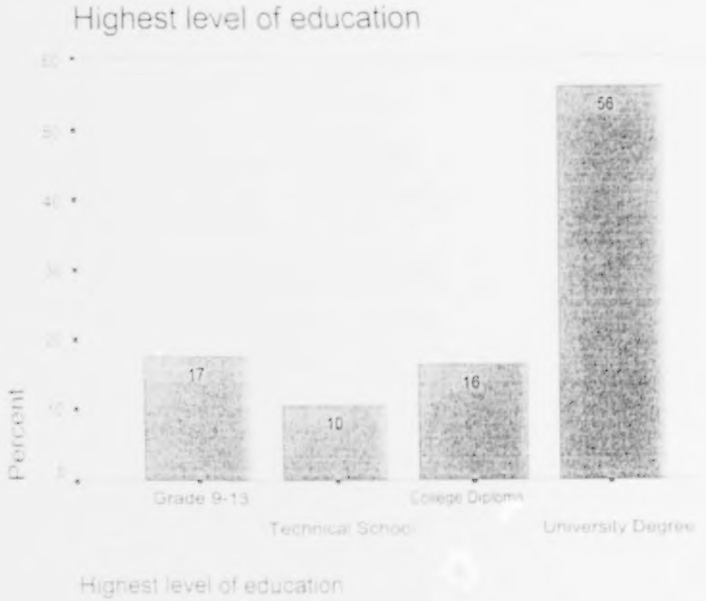


Figure A34: Québec Sample –Health-Related Diet Decisions

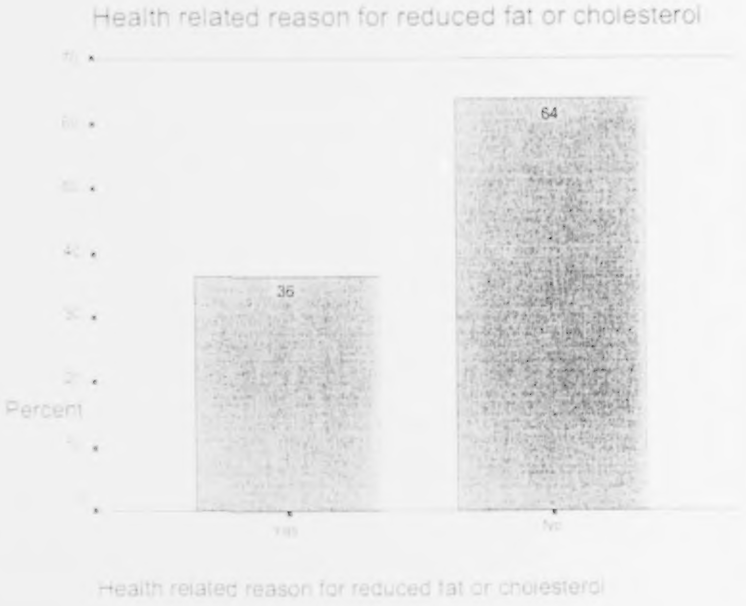


Figure A35: Québec Sample – Number of Times Tried Bison

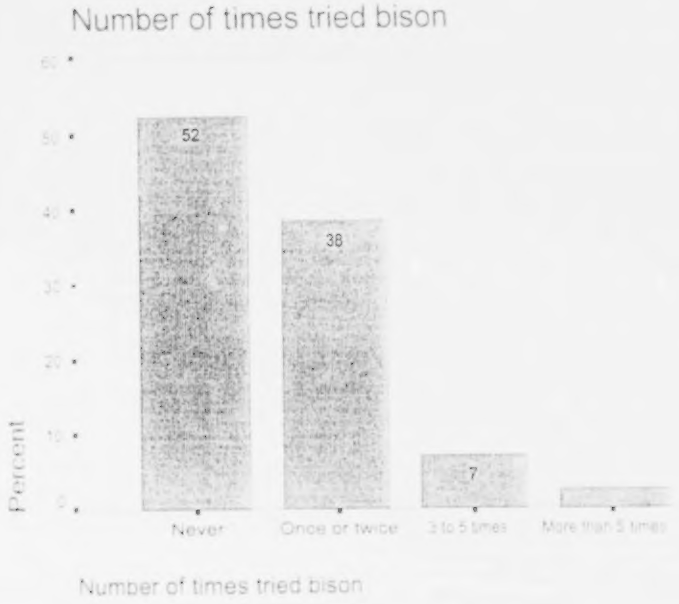
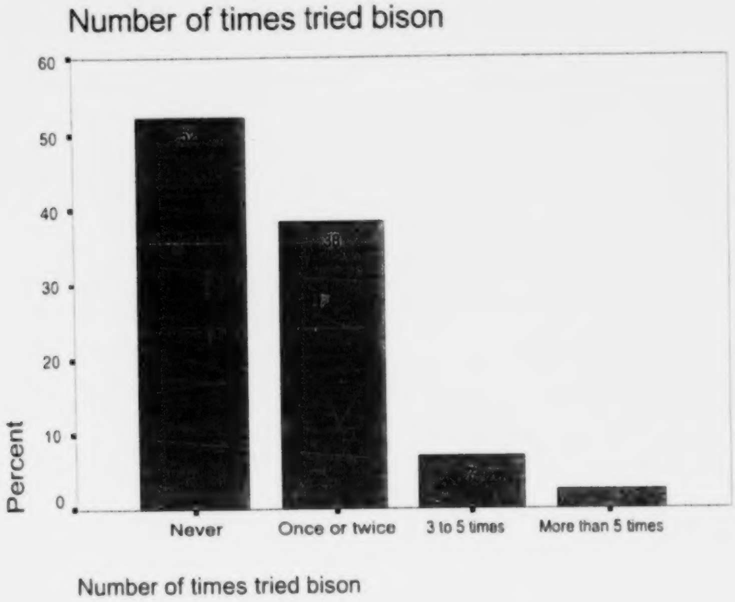


Figure A35: Québec Sample – Number of Times Tried Bison



BISON MARKETING PROJECT
For the Saskatchewan Bison Association

PHASE TWO REPORT
RESULTS OF ONTARIO AND QUÉBEC CONSUMER PANELS

Jill E. Hobbs
Cody Cunningham

SPECIALTY LIVESTOCK MARKETING RESEARCH GROUP
DEPARTMENT OF AGRICULTURAL ECONOMICS
UNIVERSITY OF SASKATCHEWAN

JANUARY 30 2003

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BISON MARKETING PROJECT – PHASE TWO REPORT

EXECUTIVE SUMMARY

Phase Two of the Bison Marketing Project built upon the Phase One results as reported by the Specialized Livestock Marketing Research Group (SLMRG). From the results of Phase One, it was determined that the best markets for Phase Two and Phase Three work would be Ontario and Québec. It was also decided that two other further processed bison products would be developed for the study, a bison garlic sausage and three flavours of seasoned bison strips. Both products were manufactured at the Saskatchewan Food Innovation Centre in Saskatoon after being developed by the Specialty Livestock Value Added Program at the University of Saskatchewan. These products will be utilized in Phase Three, a retail trial, of this four-phase project.

The products and packaging to be tested by these consumer taste panels include: Bison Garlic Coil, Mesquite BBQ Seasoned Bison Strips, Roasted Garlic Seasoned Bison Strips and Ginger Teriyaki Seasoned Bison Strips.

The Ontario taste panels were conducted in Guelph from December 3 to 5 2002. Compusense, a professional sensory analysis company, was recruited to help run the Ontario panels. There were 77 participants in Ontario. The Québec taste panels were conducted in St-Hyacinthe, Québec with the assistance of Cintech in St-Hyacinthe, Québec on January 16, 2003. A total of 43 panelists evaluated the products and product packaging in Québec.

In both locations, following the sensory panel, respondents were asked a set of questions regarding their knowledge of bison and the bison industry. In addition to the taste panel, 57 of the Ontario panelists took part in an economic bidding experiment, designed to measure the effect of different information formats (nutritional information, production method information and testimonial information) on panelists' willingness to pay for the bison strip product.

Initial analysis suggests that of the four products tested, the Bison Garlic Çoil appears to have been the best received. In Ontario the Seasoned Bison Strips received average ratings but in Québec the products received more satisfactory ratings. However, the Roasted Garlic was still the least liked of the three seasoned bison strip flavours. Tenderness remains the greatest challenge for the bison strip product.

The majority of the panelists had never tasted bison and either did not know or thought bison were an endangered species. They also expressed limited knowledge about the nutritional qualities of bison or the use of growth hormone and antibiotics in production. Further analysis of these results will be incorporated into the final report in phase four of the project.

BISON MARKETING PROJECT – PHASE TWO REPORT

INTRODUCTION

Phase Two of the Bison Marketing Project built upon the Phase One results as reported by the Specialized Livestock Marketing Research Group (SLMRG). Phase One results were reported to the Saskatchewan Bison Association in June 2002.

In Phase One, consumer taste panels in five locations sampled four different bison products. The five locations were Saskatoon, Leduc, Vancouver, Guelph and Québec City. The products included bison burger, bison stew, bison kabob and bison deli roast. From the results of Phase One, it was determined that the best markets for Phase Two and Phase Three work would be Ontario and Québec. It was also decided that two other further processed bison products would be developed for the study, a bison garlic sausage and three flavours of seasoned bison strips. Both products were manufactured at the Saskatchewan Food Innovation Centre in Saskatoon after being developed by the Specialty Livestock Value Added Program at the University of Saskatchewan. These products will be utilized in Phase Three, a retail trial, of this four-phase project.

To conduct Phase Two of the Bison Marketing Project, SLMRG recruited the help of two professional sensory companies. Compusense to conduct the consumer taste panels in Guelph, Ontario and Cintech in St-Hyacinthe, Québec. Compusense had also assisted with Phase One research in Guelph.

The products and packaging to be tested by these consumer taste panels include: Bison Garlic Coil, Mesquite BBQ Seasoned Bison Strips, Roasted Garlic Seasoned Bison Strips and Ginger Teriyaki Seasoned Bison Strips.

The Ontario taste panels were conducted in Guelph from December 3 to 5 2002. There were 77 participants, 9 of who had also participated in the Phase One study ten months prior. Panels consisted of approximately 10 people who evaluated the products and packaging in sensory facilities consisting of individual booths. Each panel took approximately 40 minutes to complete the evaluation of all four products and the packaging. The Québec taste panels were conducted in St-Hyacinthe, Québec on January 16, 2003. A total of 43 panelists evaluated the products and product packaging.

Initial analysis suggests that of the four products tested, the Bison Garlic Coil appears to have been the best received. In Ontario the Seasoned Bison Strips received average ratings but in Québec the products received more satisfactory ratings. However, the Roasted Garlic was still the least liked of the three seasoned bison strip flavours. Tenderness remains the greatest challenge for the bison products.

Participants were also asked to provide demographic information and information about their knowledge of bison. The majority of the panelists had never tasted bison and either did not know or thought bison were an endangered species. They also expressed limited knowledge about the nutritional qualities of bison or the use of growth hormone and antibiotics in production. In addition to the taste panel, Ontario panelists took part in an economic bidding experiment, designed to measure the effect of different information formats (nutritional information, production method information and testimonial information) on panelists' willingness to pay for the bison strip product.

This report presents the results of the Ontario sensory panels in section 1, followed by information from the willingness-to-pay experiments conducted with the Ontario panelists in section 2. Results of the Québec taste panels are then presented in section 3, where appropriate including comparisons with the Ontario panel results. Section 4 presents responses to the questions regarding knowledge of bison and the bison industry. Finally, the demographic break-down of the sample in each location is provided in section5. Further analysis of these results will be incorporated into the final report in phase four of the project.

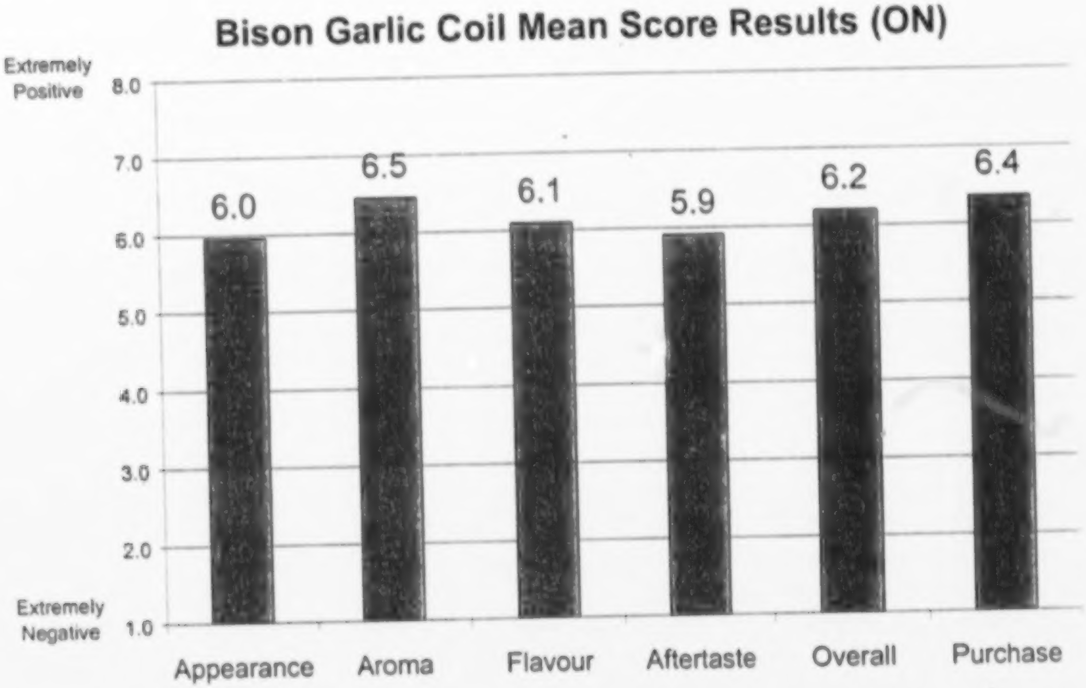
SECTION 1 – RESULTS OF ONTARIO CONSUMER TASTE PANEL

Results presented here are for the Ontario consumer panel. All results are reported as means of the 77 responses for each product evaluation question. The packaging results are also reported. The Bison Garlic Coil results will be presented first, followed by the Seasoned Bison Strips results.

1.1 Results for the Bison Garlic Coil

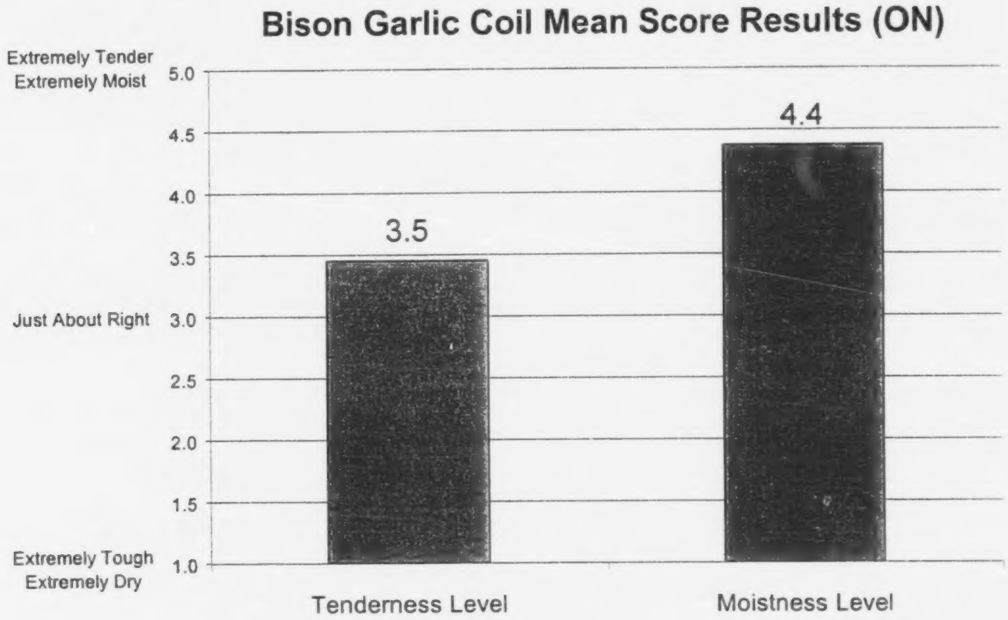
Participants received the Bison Garlic Coil sample first in every group. This allowed for easier comparisons of the Seasoned Bison Strips as well as extra preparation time. Each participant received three slices of Bison Garlic Coil 0.75cm thick.

Figure 1.1 – Bison Garlic Coil Mean Score Results (8-point scale).



This product scored well in the evaluation. All categories were placed near, at or over 6 on the 8-point scale. A score of 6 or greater generally means the product is acceptable enough to go ahead with a retail trial.

Figure 1.2 – Bison Garlic Coil Mean Score Results (5-point scale).



On the five-point scale, for tenderness and moistness, the product also scored well. The tenderness score reflects that the Bison Garlic Coil met the expectations of the 77 panelists for how tender bison sausage should be, represented by 3, by giving the sausage a mean score of 3.5. However, the product appears to be moister than the panelists preferred with a mean score of 4.4 out of 5.

BISON GARLIC COIL COMMENTS

The overwhelming majority of comments about the Bison Garlic Coil were positive.

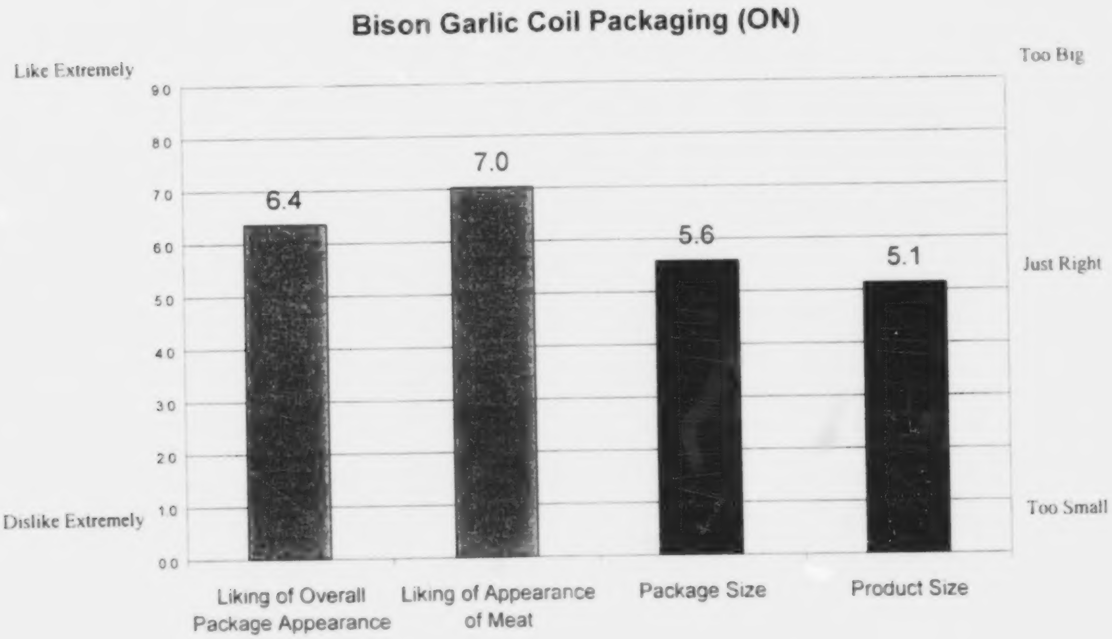
- I really enjoyed the flavour, the after taste was pleasant and the outer skin was just right
- I would buy this product if it were on the market...I think my family would enjoy it as well..
- i thought the sample would taste more gristly or fatty but it was very good
- Delighted it is garlicky, with texture
- The meat was very tender and juicy in the mouth. That is a really good quality for meat to have because often meat can be tough and dry.
- I would recommend this to anyone who particularly enjoys this type of product. No complaints whatsoever.
- I found this sample to be very satisfactory, and would definitely purchase it as long as it was not unreasonably priced
- I really liked the taste of this. I could have had a little more garlic for my taste but still really good. I would buy it if the price were compatible with other similar products. I was surprised at how good it was.
- I was surprised at how mild the flavour was. My expectation of bison was that it would taste 'gamier'. The sausage is very enjoyable.

Some comments about product improvement included:

- It has a great aftertaste, I didn't like the chunks of fat in my mouth too much.
- The product was tasty, however the texture, and the 'fatty' residue left in my mouth after consumption were not very pleasing.
- I think there was just a bit too much garlic. The aroma again was fantastic but found the garlic lingered on a little too long. It looks leaner than Koubassa and a lot tastier.
- I would buy it immediately if it had a spiciness to it. I found it a bit bland. Yes more taste is desirable.
- I would eat this in a stick form, plain, or as a sandwich meat. No gristle is good. I would like to try this in mild, medium, and hot. Maybe even Cajun, or jerk bison? Sounds good to me!!!
- The casing on the sausage is somewhat 'plasticy' and has an unpleasant texture. One would think you could peel this off when in fact you cannot.
- Make it bigger and light tasting.
- No taste.......skin too tough.
- Too much garlic - smell/taste of garlic.
- Not enough flavour.

BISON GARLIC COIL PACKAGING

Figure 1.3 – Bison Garlic Coil Packaging.



The overall Bison Garlic Coil package appearance received a rating of 6.4 on a 9-point scale and the appearance of the garlic coil received a rating of 7. The Package Size received a 5.6 and Product Size a 5.1 where 5 represents Just Right. All of the comments will not be reported here since many of the comments pertained to the black and white label that will not be used for the retail trials. Relevant comments about the packaging included:

- The packaging makes the product look natural and healthy. I would be attracted by the packaging.
- It's eye catching because of the gold backing of the packaging...I would definitely look to see what type of meat it was
- The packaging is simple with easy to read ingredients and product information. You can clearly see the product so you know what you're purchasing. It looks very clean and safe to eat.
- It looks good on the gold foil verses just being vacuum-sealed like a koubassa roll.
- It doesn't really stand out against other products, most sausage is packaged in the same way.
- Very well packaged. Appealing to the eye.
- Very well packaged with all information supplied. If there is an expiry maybe informative.
- I like the type of packing.. could be more attractive to the eye.. and possibly show section of meat on front label.
- The design of the company logo is not clear. I like to know who I'm buying from.

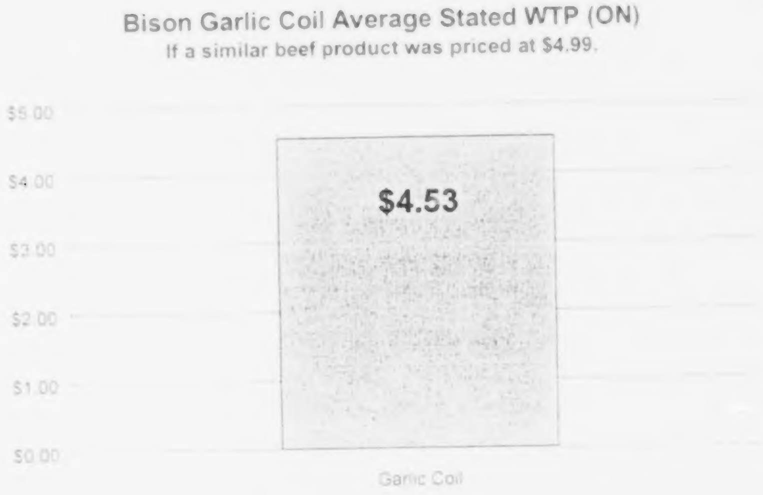
- The foil wrapper is somewhat unattractive, could be packaged differently.
- Packaging is fine
- Good presentation.
- It is very simple. Not too much waste. However, the fact that it is bison is not 'jumping' out at me, so I may not notice it...
- Overall the package is very nice and the meat looks extremely appetizing!
- Very detailed product contents, very clear production date, sealed very well.
- It looks good, just like any product similar, my preference would be a vacuum sealed product.
- The packaging is good as I like the ingredients clearly written on the package. And the production date is clear. With the Canada stamp on it. However, I do not see clearly or at all if the expiry date is on it.
- Well packaged. Will other smaller sizes be available?
- Looks very appetizing.
- I would like to know where to purchase this product as I know that my husband would love it
- No, looks like other sausage packaging.
- I like this style of package-not too much to throw out.
- Common packaging similar to most sausage like products.
- I like the use of the gold foil front.
- Too much packaging. Shows product well, lists contents and is easily read.
- I like the color and the size.
- Professional.
- I think it could be a slightly smaller package especially since bison is a relatively new product and to sample it people would buy a smaller package at a lower price.
- I like the size of it, the thickness of the sausage, the color. I would use less foil, I don't like all the foil around and I would put the ingredients, etc. info on the back.
- I like the information about the production date, the stamp of approval. I would add a more attractive label and would definitely include a best before date, everyone always feels safer with that kind of information. I like that it is packaged in the gold and plastic and not just in a plastic holder.
- I like that it clearly states the product and the ingredients in the product, as well, that it is fully cooked and smoked. All the questions I would want answered when purchasing this product.
- The overall appearance is very appealing.
- The white label is too simple looking. I think there should be more colour used as well as some comparison information (ex.calories, fat) to beef and pork so the consumer can learn about bison. I would like to learn why I should buy this product.
- I really like the appearance of the meat - it looks very fresh.
- It looks good but without reading the label I wouldn't know it was bison
- Looks fresh due to the vacuum packaging. The gold foil kind of catches you eye.
- It is not very clear that it is bison. Perhaps a more colourful package with bigger letters showing what it is.

The majority of the comments are positive as reflected in Figure 1.3 in the overall package appearance category.

BISON GARLIC COIL STATED WILLINGESS-TO-PAY

After sampling the Bison Garlic Coil and examining the packaging participants were asked what they would be willing-to-pay for the package of Bison Garlic Coil. Participants were told that a similar beef product packaged the same way would cost $4.99 per package. The mean result was $4.53 per 350g package of Bison Garlic Coil.

Figure 1.4 – Bison Garlic Coil Average Stated WTP.



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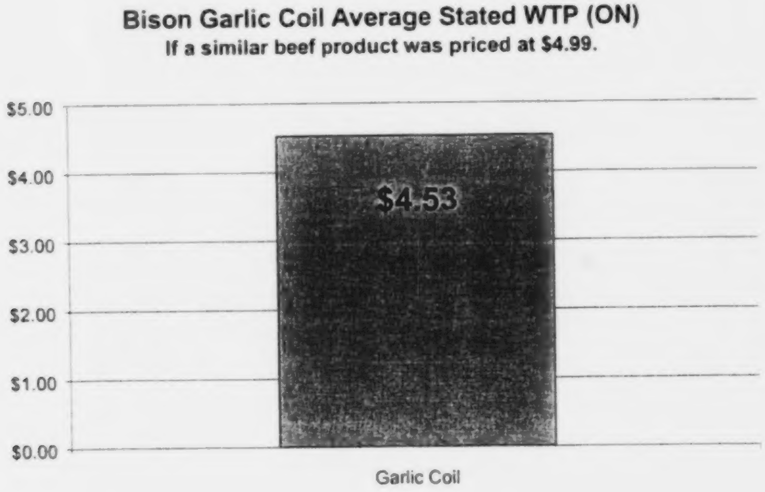
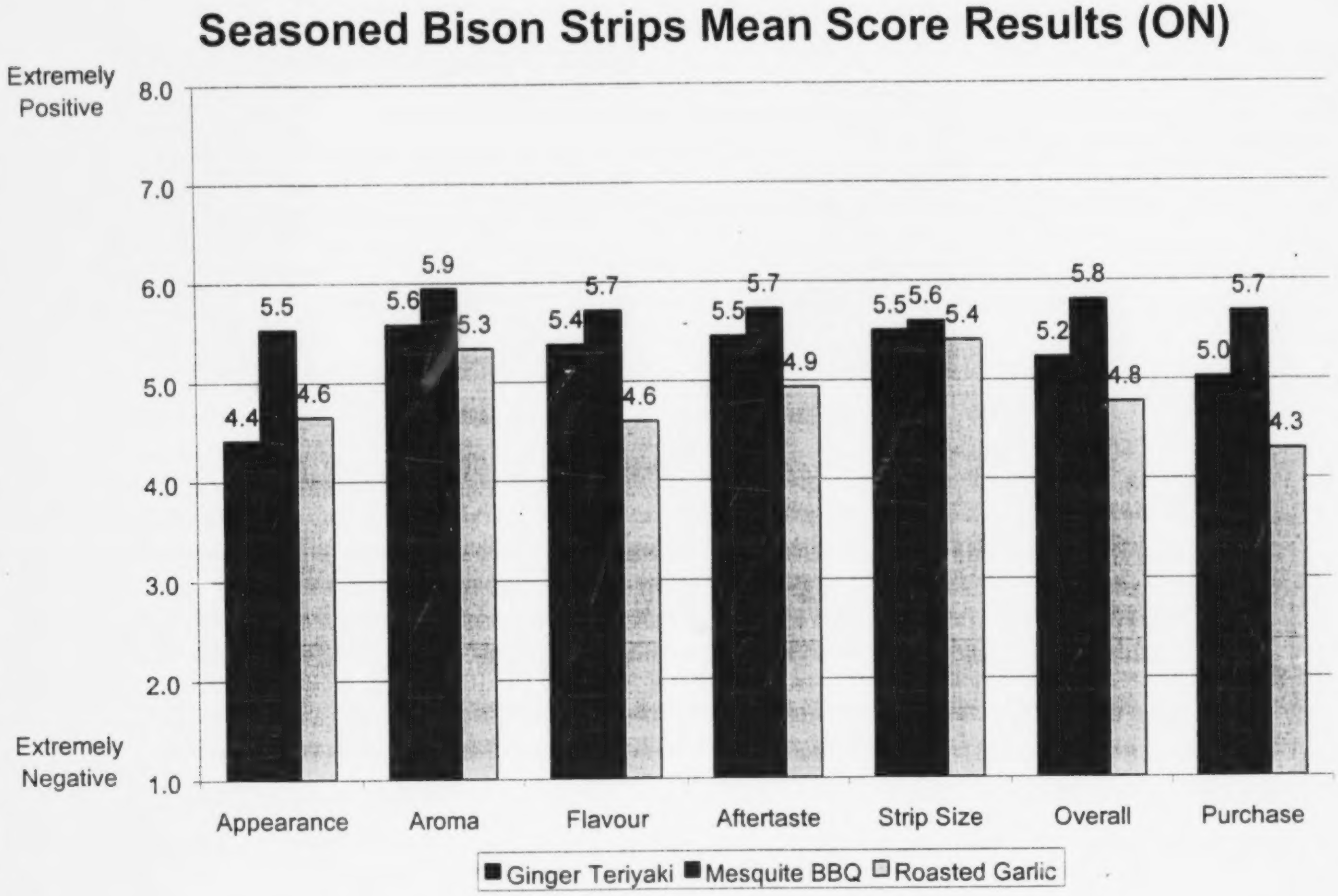


1.2 Results for the Seasoned Bison Strips

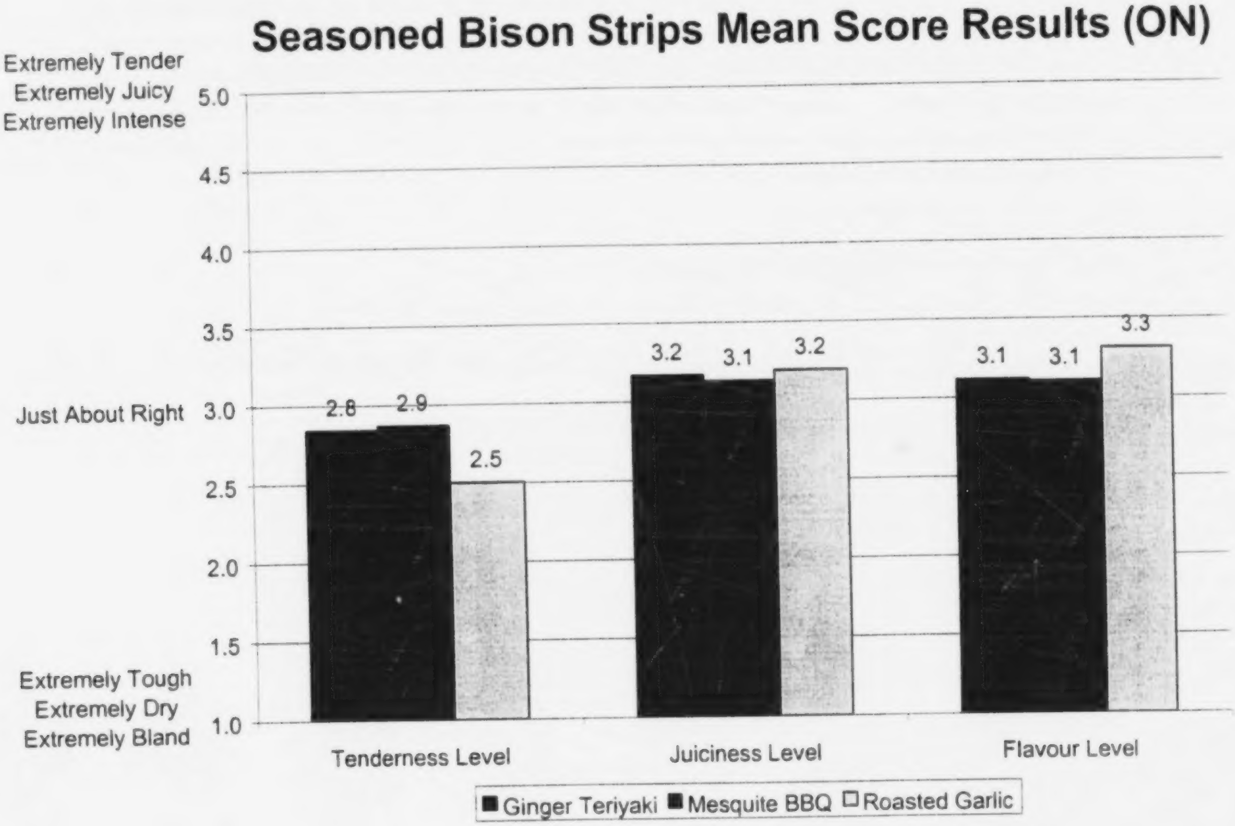
These products were served in a different order to each group of panelists, after the Bison Garlic Coil had been sampled and packaging evaluated. Each flavour of Seasoned Bison Strips was prepared in a separate electric wok and each panelist received 2 to 3 pieces. Between each sample the panelist would evaluate the packaging of the particular product. All the packages were kept refrigerated between groups. Panelists had access to and were encouraged to consume water and unsalted soda crackers between samples.

Figure 1.5– Seasoned Bison Strips Mean Score Results (8-point scale).



The graph displays all three seasoned bison strips mean score results of acceptability together. This allows for easy comparison of the products. As shown, none of the products rank higher than 6 in any of the above categories. Mesquite BBQ consistently ranked first, Ginger Teriyaki second and Roasted Garlic last.

Figure 1.6 – Seasoned Bison Strips Mean Score Results (5-point scale).



The five-point scale for tenderness, juiciness and flavour reveals that participants thought the products were Just About Right in all categories. Tenderness was the only factor where many comments revealed that the samples some panelists received were tough. Comments from the Ginger Teriyaki sample and related to product tenderness included:

- The meat is a little tough so small strips make it easier to chew.
- Actually when I first saw this product, I didn't really think it looked very good...the taste was pretty good though even though it was a little tough
- The flavor doesn't match the appearance of the meat. This really surprised me. It tasted much better than I was anticipating. The meat was slightly chewy. By this I mean that it was a little hard to chew, but not enough to distract from the flavour of the sample.
- While I rated the tenderness high, during the consumption of the rest of the strips, I did find them a bit 'stringy' - some hard to chew strings of meat.
- A little stringy and chewy, overall acceptable but not overly appealing
- It did not have a pleasant taste and it was tough.
- Perfect balance of flavours. You can taste the saltiness on the first bite, but it's actually perfectly salted. A tiny bit chewy.
- Although a little tough, the taste compensated

- The flavor wasn't bad, but the texture was really muscle like and chewy. I didn't like that.
- The meat was really chewy which was annoying because it was hard to bite through.
- I felt it was a bit tough.
- This sample really didn't look too bad, BUT it was soooo tough - couldn't cut it - could hardly bite it. I'm not a huge fan of teriyaki flavouring, but this was worse than I've ever had
- I couldn't even cut through the meat, as there was a big grisly part through it.
- I have found that some of the pieces are tougher than others. It is like some are from different parts of the bison i.e. more tender parts than others. That is my impression.
- The strip of bison that I had was fatty in that it was hard to chew in places.
- Perhaps a bit too chewy.
- One piece was quite stringy, although all the others were nice.
- A little tough to cut or chew tasty appearance on own not as good as it would be on a plate serving.
- It could have been a little more tender but I really enjoyed it. The flavour was wonderful. I would serve it to my family
- I would want it to be more tangy??, spicier, and needs to be more tender. My particular pieces were kind of hard. A little more pizzazz to the taste.
- For lean meat, it was tender. However, the samples that I had were really gristly and was difficult to cut and chew. The flavor was nice but found it a little salty.
- Although I found the meat a bit difficult to cut because of some fat, it didn't really taste fatty.
- Too chewy, not tender enough
- The meat was a little tough. I liked the flavour though.
- A little tough, appearance was just ok.

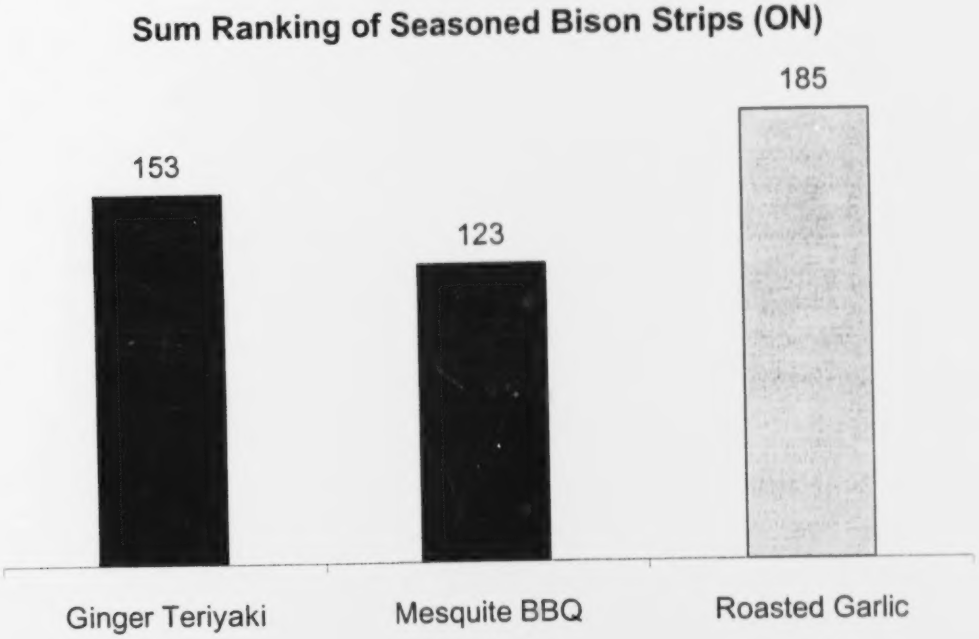
SEAONSONED BISON STRIPS SIZE ACCEPTANCE

Strip size acceptance was also explored by asking participants to provide additional comments if they scored this category a less than 5 on the 8-point scale. There appeared to have been confusion by some panelists about what meals the Seasoned Bison Strips would be best suited for. Out of 231 responses to the strips size question, there were 59 responses scoring less than 5. When asked for additional comments 25 reported the strips to be too small or thin, 11 reported the strips to be too big or long and the remaining 23 responses were ambiguous. The ambiguous responses included confusion on what to use the product for, stated the sizes were not consistent, made another unrelated comment or stated that the strip size was fine, especially if it was used for stir-fry.

SEASONED BISON STRIPS RANKING

The seasoned bison strips were also ranked by each panelist. Figure 1.6 displays the sum ranks of the three products. The product with the **lowest** score (Mesquite BBQ) was the most liked product.

Figure 1.7 – Seasoned Bison Strips Ranking.



SEASONED BISON STRIPS PACKAGING

Between each sample of Seasoned Bison Strips the panelist reviewed the packaging for that product. Unfortunately, the packaging provided for these panels was not the final packaging design intended for the retail trials. Nevertheless the results may provide useful information for future packaging design changes. Figure 1.8 presents the aggregated results for the evaluation of the seasoned bison strips packaging.

Figure 1.8 – Seasoned Bison Strips Packaging.

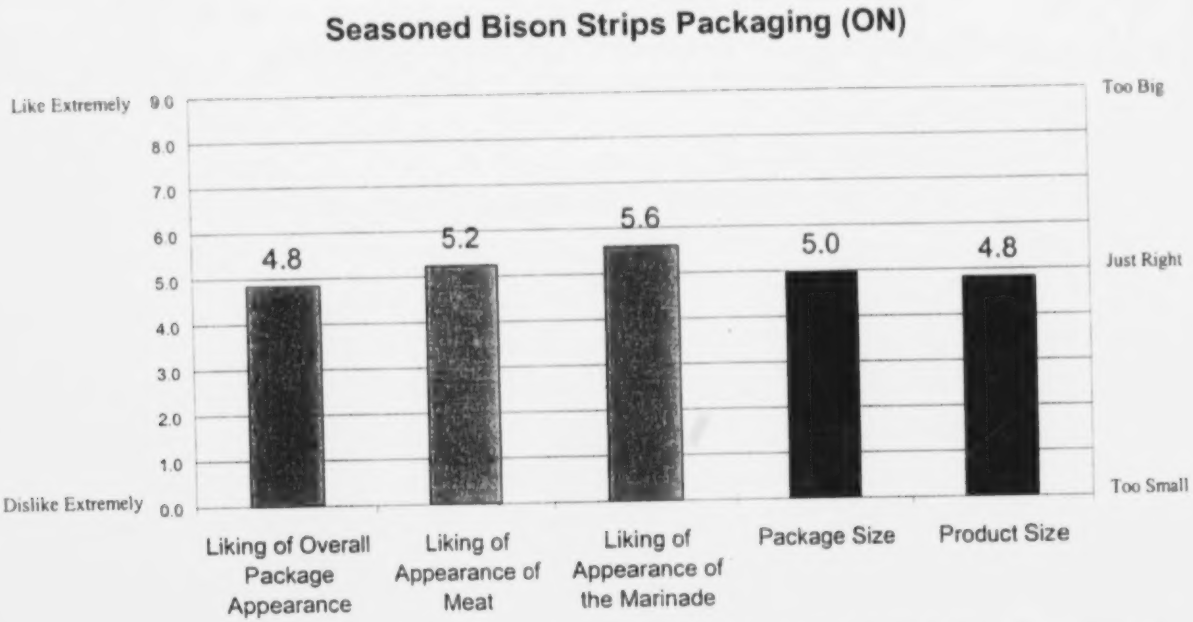
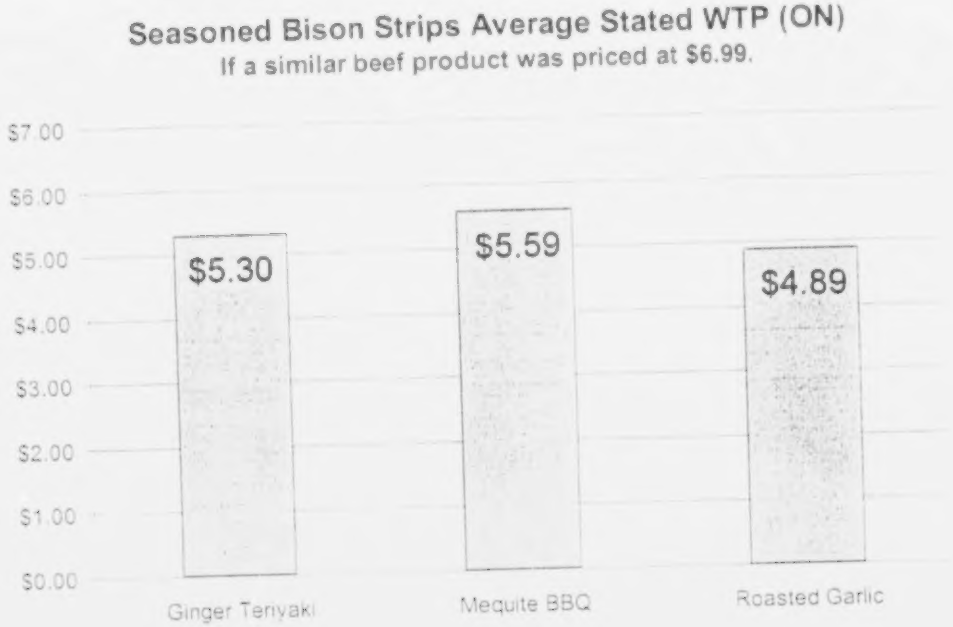


Figure 1.8 shows that the Package Size and Product Size score Just Right. The categories of Overall Package Appearance, Appearance of Meat and Appearance of Marinade rank 4.8, 5.2 and 5.6 respectively on the 9-point scale. These relatively low scores are in part due to the black and white label and the cryovac packaging. The majority of comments related to how the black and white label was unappealing and boring. Some comments included putting the cryovac package in a colourful box, including a photo of a prepared meal, adding information about bison such as nutritional qualities and packaging the marinade separately from the meat. A positive comment for the Roasted Garlic marinade was that people liked being able to see the flakes of pepper. There were also several complaints of leaking packages.

SEASONED BISON STRIPS STATED WILLINGNESS-TO-PAY

Panelists were also asked their stated willingness-to-pay if a similar beef product was priced at $6.99 per 450g package. The mean willingness-to-pay per product was $5.59 per package for the Mesquite BBQ, $5.30 per package for the Ginger Teriyaki and $4.89 for the Roasted Garlic.

Figure 1.9 – Seasoned Bison Strips Stated Average WTP.



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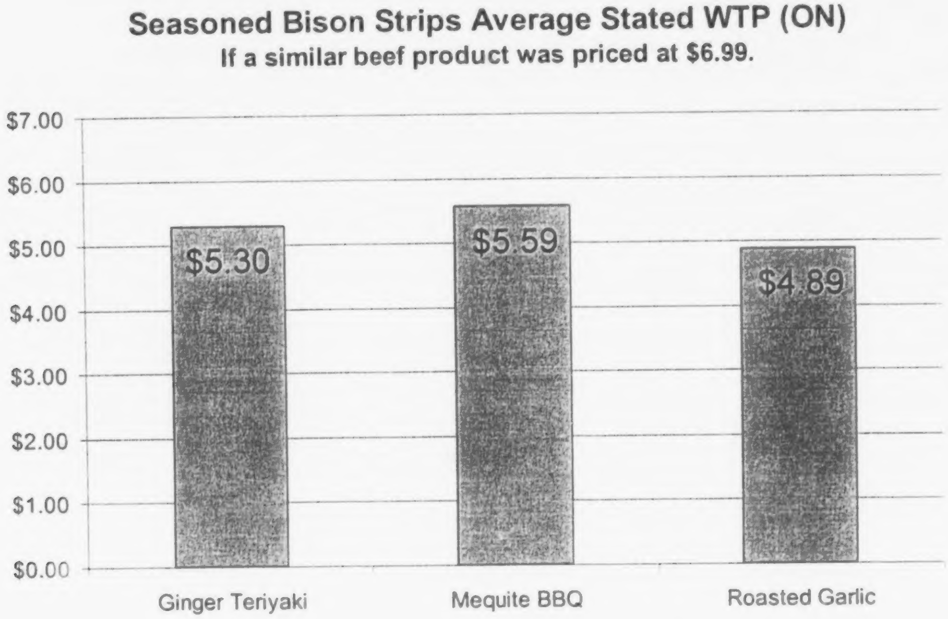


SECTION 2: ONTARIO CONSUMER PANEL: WILLINGNESS-TO-PAY ANALYSIS

2.1 Detailed Stated Willingness-to-Pay Analysis

Presented here is a more detailed analysis of the stated willingness-to-pay (WTP) of the Ontario consumer panel for each of the four bison products. For each product there is a scattergram displaying the stated WTP of each participant and an analysis table. The table shows the distribution of prices above, equal to, below and zero for each product when compared to a similar beef product, gives the percentage of participants who placed a price in one of those four categories and provides the average bid per category. The first product presented is the Bison Garlic Coil followed by the Seasoned Bison Strips and then each of the three respective types of Seasoned Bison Strips.

Bison Garlic Coil

Figure 2.1 - **Scattergram of Stated WTP for the Bison Garlic Coil**

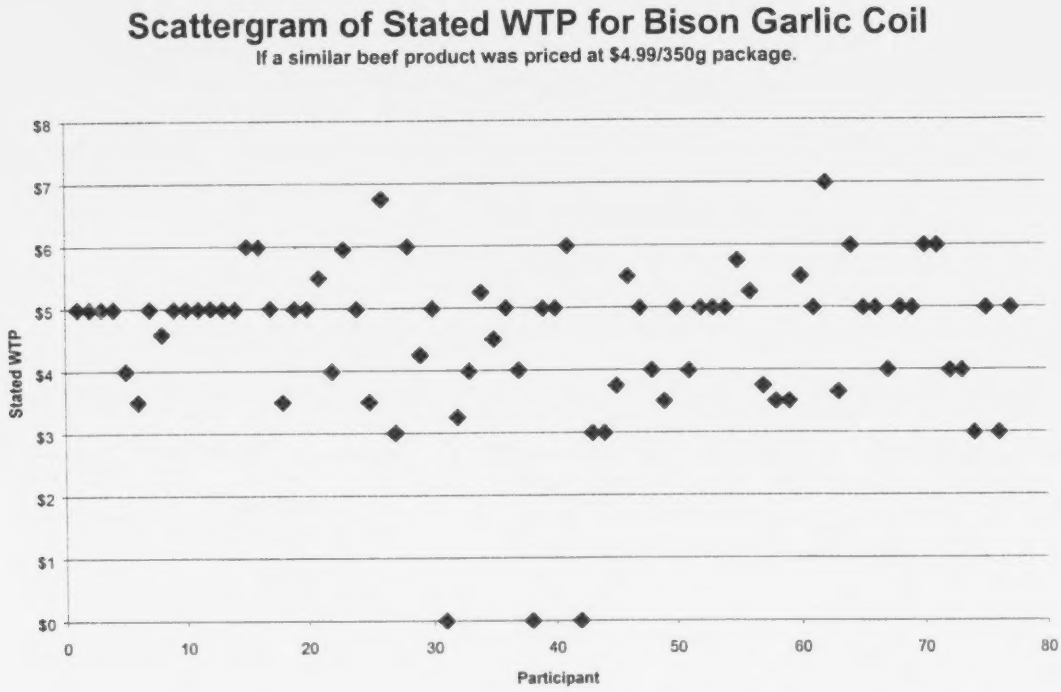


Table 2.1 – Analysis of Bison Garlic Coil Stated WTP

Category of Stated WTP Placement	Number of Participants in Category	Percentage of Participants in Category	Average Bid in Category
> $5	16	20.78%	$5.90
= $4.99 or $5	31	40.26%	$4.99
< $4.99	27	35.06%	$3.86
= $0	3	3.90%	$0.00
Total	**77**	**100.00%**	

Over 60% of the participants stated a WTP price equal to or greater than the similar beef price of $4.99/350g package. Less than 40% of the participants would pay less than the similar beef price and less than 4% would not buy this product at any price.

Seasoned Bison Strips

Below is a scattergram displaying all stated WTP prices for all three types of Seasoned Bison Strips. Each type will be presented and discussed separately in the next few pages.

Figure 2.2 – Scattergram of Stated WTP for Seasoned Bison Strips

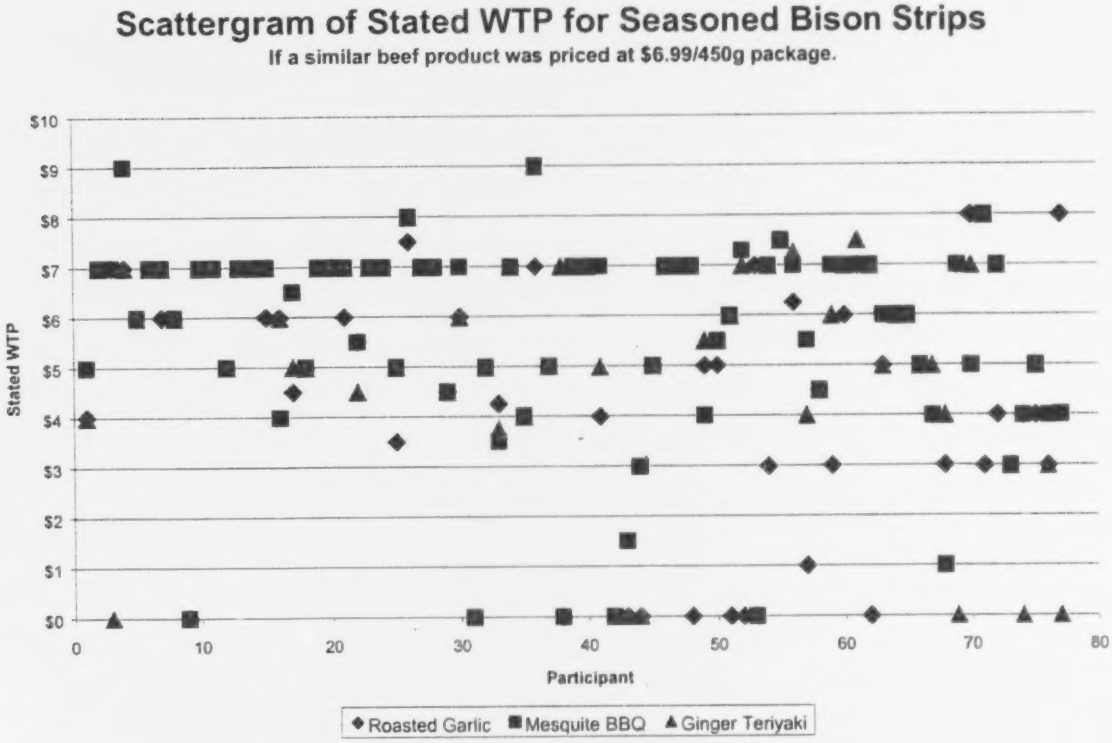


Table 2.2 – Analysis of Seasoned Bison Strips Stated WTP

Category of Stated WTP Placement	Number of Participants in Category	Percentage of Participants in Category	Average Bid in Category
> $7.00	16	6.93%	$7.94
= $6.99 or $7.00	84	36.36%	$6.99
< $6.99	106	45.89%	$4.72
= $0.00	25	10.82%	$0.00
Total	**231**	**100.00%**	

In aggregate, more than 55% of the respondents reported a WTP of less than the similar beef price of $6.99/450g package, 46% more or equal and 11% wouldn't even purchase.

Ginger Teriyaki Seasoned Bison Strips

Figure 2.3 - Scattergram of Stated WTP for Ginger Teriyaki Seasoned Bison Strips

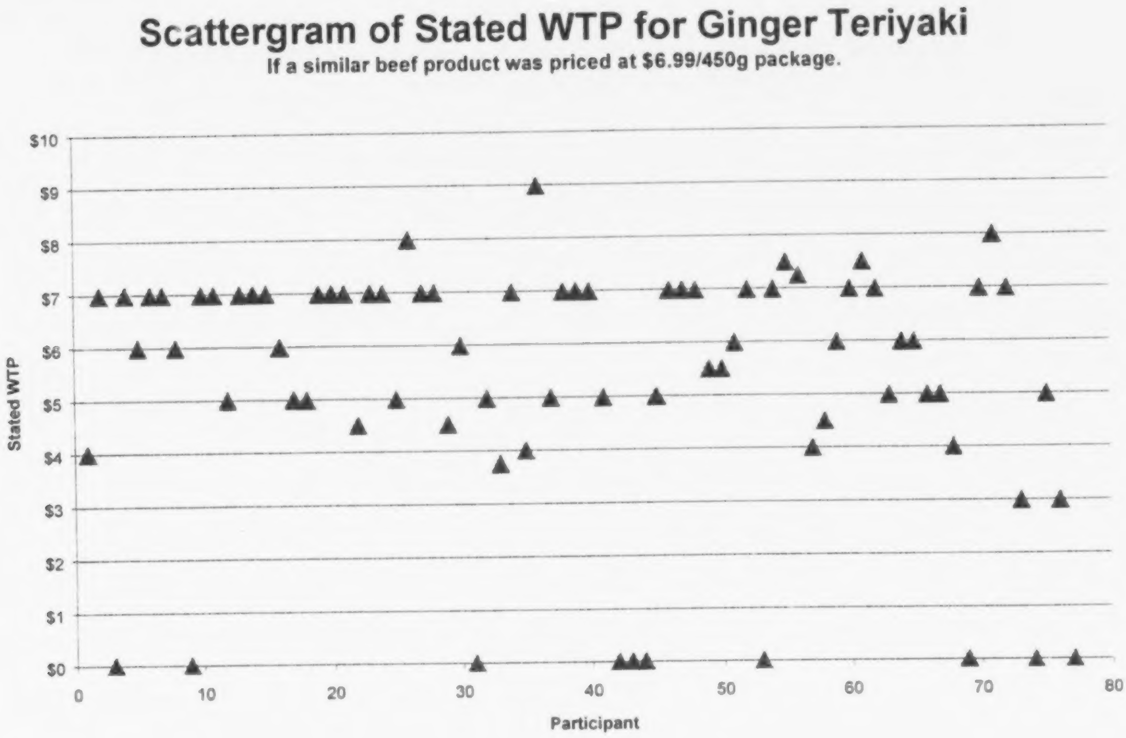


Table 2.3 – Analysis of Ginger Teriyaki Seasoned Bison Strips Stated WTP

Category of Stated WTP Placement	Number of Participants in Category	Percentage of Participants in Category	Average Bid in Category
> $7.00	6	7.79%	$7.87
= $6.99 or $7.00	29	37.66%	$6.99
< $6.99	32	41.56%	$4.94
= $0.00	10	12.99%	$0.00
Total	**77**	**100.00%**	

Less than 48% of the participants stated a WTP price greater than or equal to the similar beef price of $6.99/450g package. More than 50% of respondents would not pay the similar beef price for this product and 13% of the participants would not purchase the product.

Mesquite BBQ Seasoned Bison Strips

Figure 2.4 - Scattergram of Stated WTP for Mesquite BBQ Seasoned Bison Strips

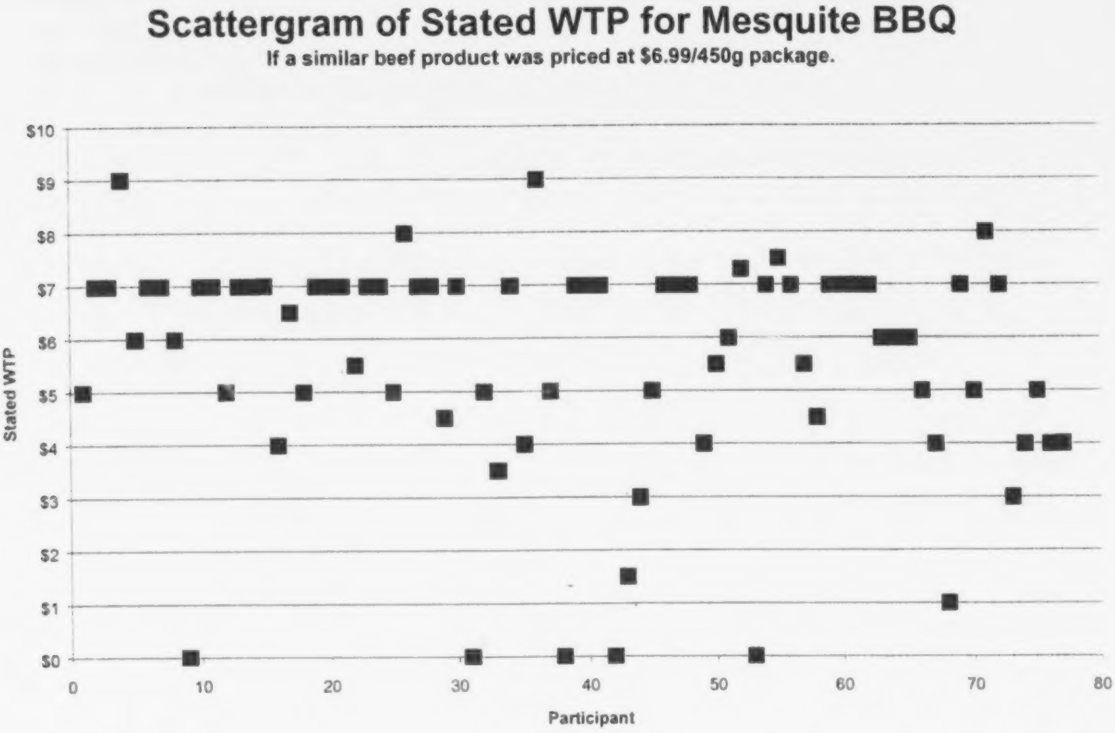


Table 2.4 – Analysis of Mesquite BBQ Seasoned Bison Strips Stated WTP

Category of Stated WTP Placement	Number of Participants in Category	Percentage of Participants in Category	Average Bid in Category
> $7.00	6	7.79%	$8.13
= $6.99 or $7.00	32	41.56%	$6.99
< $6.99	34	44.16%	$4.64
= $0.00	5	6.49%	$0.00
Total	**77**	**100.00%**	

Less than 50% of the participants stated a WTP price of equal to or greater than the similar beef product price of $6.99/450g package. More than 50% of the respondents would pay less than the beef price and 6.5% would not purchase this product.

Roasted Garlic Seasoned Bison Strips

Figure 2.5 - Scattergram of Stated WTP for Roasted Garlic Seasoned Bison Strips

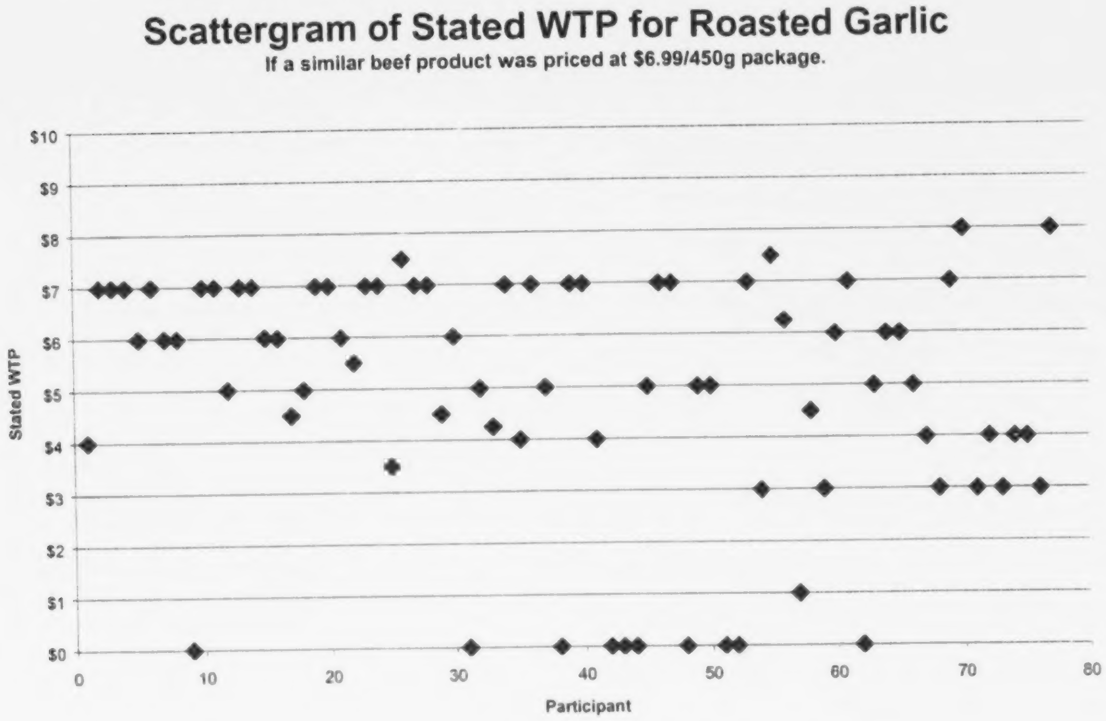


Table 2.5 – Analysis of Roasted Garlic Seasoned Bison Strips Stated WTP

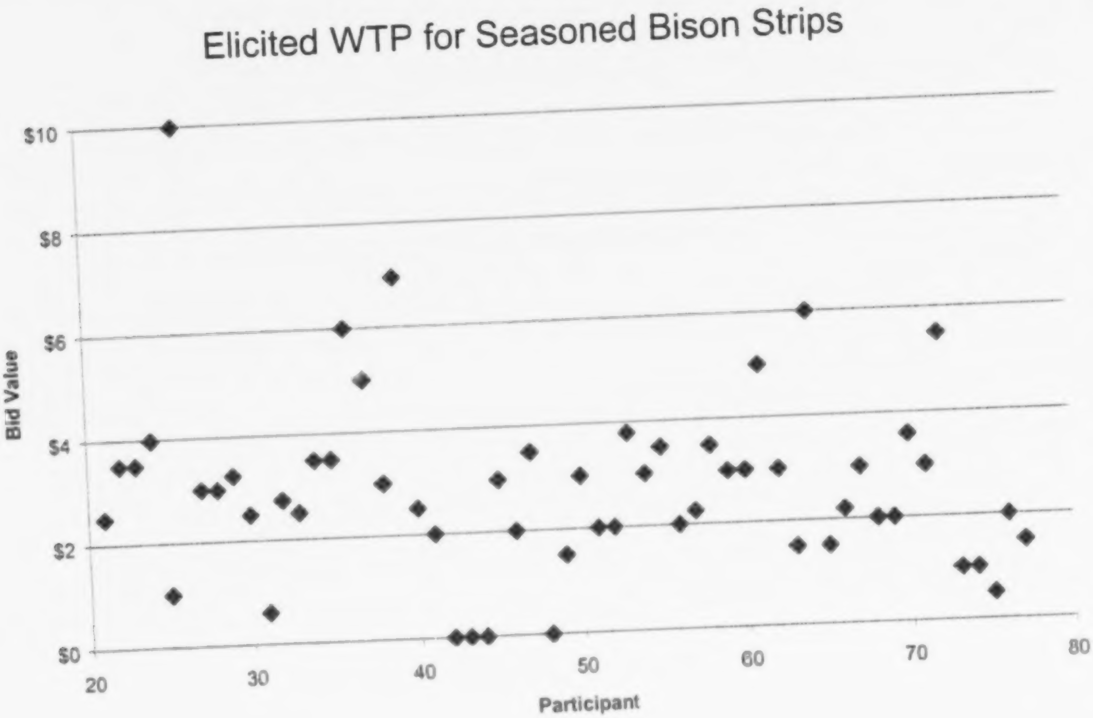
Category of Stated WTP Placement	Number of Participants in Category	Percentage of Participants in Category	Average Bid in Category
> $7.00	4	5.19%	$7.75
= $6.99 or $7.00	23	29.87%	$6.99
< $6.99	40	51.95%	$4.62
= $0.00	10	12.99%	$0.00
Total	**77**	**100.00%**	

Only 35% of the participants stated a WTP price of equal to or greater than the similar beef product price of $6.99/450g package. More than 60% would pay less than $6.99/450g package and 13% of respondents would not purchase the product.

2.2 Elicited WTP with a Bidding Experiment

As part of the Ontario consumer panel, a bidding experiment or 'experimental auction' was conducted to elicit consumers' willingness to pay (WTP) for a package of Seasoned Bison Strips. This provides additional information on WTP. Each participant would bid once for a package of Seasoned Bison Strips and would be able to take the package home (in exchange for paying the bid price) if they were the "winner" of the auction. The auction is set up so as to create the incentive for people to bid honestly and not to under or over bid. It is important to note that the bidding experiment was conducted before the participants took part in the sensory panels. Thus, participants had not sampled any of the products at this time, they did not receive any information concerning bison before this first auction and were given no beef reference price. They were allowed to view the product as it was carried around the room and were only told it was a 450g package of Seasoned Bison Strips. Participants were not told what flavour or seasoning type the strips were in, how the product was to be prepared or any other information about the product. The auction data will be used for further economic analysis as part of Phase 4 of the project, but it is useful at this point to view the raw data, which reflects the bids people made when they had minimal information about the bison product. A total of 57 people participated in this portion of the bison research. Below is a scattergram of all the bids placed by the 57 participants.

Figure 2.6 – Scattergram of Bids for a 450g package of Seasoned Bison Strips



Only 4 participants submitted a bid of zero, the average bid for the first round with no information about bison was $2.80/450g package of bison.

Information Treatments and Elicited WTP

Nutritional Information Treatment

In the first round of bidding the 17 participants in this category had an average WTP of $2.981/450g package. Before starting a second round of bidding participants in this category received a colour nutritional comparison chart. The chart compared the iron, fat, cholesterol and caloric content of 100g of cooked lean bison, beef, chicken and pork. Participants were given some time to review the chart before a second round of bidding commenced. **Bids increased an average of 22.1 cents to $3.201/450g package.**

Testimonial Treatment

In the first round of bidding the 20 participants in this category had an average WTP of $2.238/450g package. Before starting a second round of bidding participants in this category received a testimonial from a chef about the taste of bison. The testimonial came from Chef Peter Phillips who owns his own catering business and restaurant, "Bison is delicious due to its tender, non-greasy taste that's richer and sweeter than beef." Participants were given some time to review the statement before a second round of bidding commenced. In this category **bids increased an average of 21.0 cents to $2.448/450g package.**

"Natural" Treatment

In the first round of bidding the 20 participants in this category had an average WTP of $3.217 /450g package. Before starting a second round of bidding participants in this category received a statement telling them that, "Growth hormones and sub-therapeutic antibiotics were not used in the production of the bison used to manufacture this product." Participants were given some time to review the statement before a second round of bidding commenced. In this final category **bids increased an average of 18.5 cents to $3.402/450g package.**

Table 2.6 – Information Treatments, Elicited WTP Values and Change

Treatment Type	# of Participants	1st Round Mean	2nd Round Mean	Change (+/-)
Nutritional	17	$2.981	$3.201	+$0.221
Testimonial	20	$2.238	$2.448	+$0.210
"Natural"	20	$3.217	$3.402	+$0.185

Comments

Many of the participants in the elicited WTP bidding experiment provided comments about their bidding and purchase intention behaviour. Many of the comments related to the information treatment they had just received:

- Although I would be more likely to buy it, I did not and would not change my bid because of this (nutritional) info.
- I would more likely to buy in regards to the nutritional chart shown.
- Knowing the nutrition iron/fat/etc. levels would make me want to buy: for better eating.
- Always looking for higher nutritional value and fewer calories and less fat!
- It has more iron, less fat and calories - would probably purchase it.
- I would be interested in the amount of protein bison contains.
- It looks like bison is healthier meat and I would therefore consider buying it.
- It's a good source of iron, compared to the other popular meat choices - important for women esp. Calorie counts and fat not as important as iron to me.
- That comment coupled with cooking instructions would make me slightly more likely to purchase it then just seeing it in the package.
- I never even knew they sold bison meat.
- Because of the sweetness and tenderness.
- Have tasted bison before and liked it.
- Not initially familiar with bison. Due to its NON GREASY and sweetness I'm more likely to purchase it.
- I have tasted bison before and the chef's comments did not change my views.
- Definitely more likely to buy - it looked interesting and prepared properly delicious I am sure!
- It sounds healthier than beef and more tender.
- Makes it more of an incentive to try the product and compare it to beef. Word of mouth/testimonials really motivate me.
- It appears to be healthier and better tasting than beef.
- Would likely buy because of no growth products and because of the info I just read.
- I expect my food to not contain too many additives, so to hear that it does not meets my expectations.
- I always like to try new things. I would prefer unseasoned strips so I can make my own marinade.
- As I am now better informed.
- The info had no bearing as to my purchase.
- Data although positive didn't change my approach. Purchase item would not always tell me where it was from or how treated (or not).
- Anything with no hormones etc. is very worthwhile for good health in this time of preservatives in everything.
- I usually buy new products based on marketing taste samples at grocery stores. My initial purchase of a new product is usually favourably impacted if a coupon is offered. Once I get feedback from my entire family I usually continue to buy the product at the regular price.
- It is reassuring to know the information especially with the concerns in regard to other meat products, however, will the situation remain the same or will hormones be used some time in the future.

Other comments related to tasting or sampling the product:

- I would need to taste it before making further comments.
- I have no idea what it tastes like so I could not say for sure if I would buy it.
- Difficult to say whether or not I would purchase the strips without sampling. Truthfully, the bison strips as they are do not look very appetizing.
- Due to less fat/cholesterol/calories and more iron --> depending on taste, could be definitely more likely to buy.
- Probably if I like the taste of it later. It seems to be more nutritional than any other meat product.
- Taste is more important than nutritional --> to an extent. All meats have somewhat similar attributes --> more of a matter of preference and availability.
- Hard to say, not having tasted it. Taste is the biggest criteria for purchasing.
- True test regarding purchase will be taste.
- I still would have to do a taste test to be certain before buying.
- I would most likely try bison first, before introducing it to my family.
- I usually buy new products based on marketing taste samples at grocery stores. My initial purchase of a new product is usually favourably impacted if a coupon is offered. Once I get feedback from my entire family I usually continue to buy the product at the regular price.

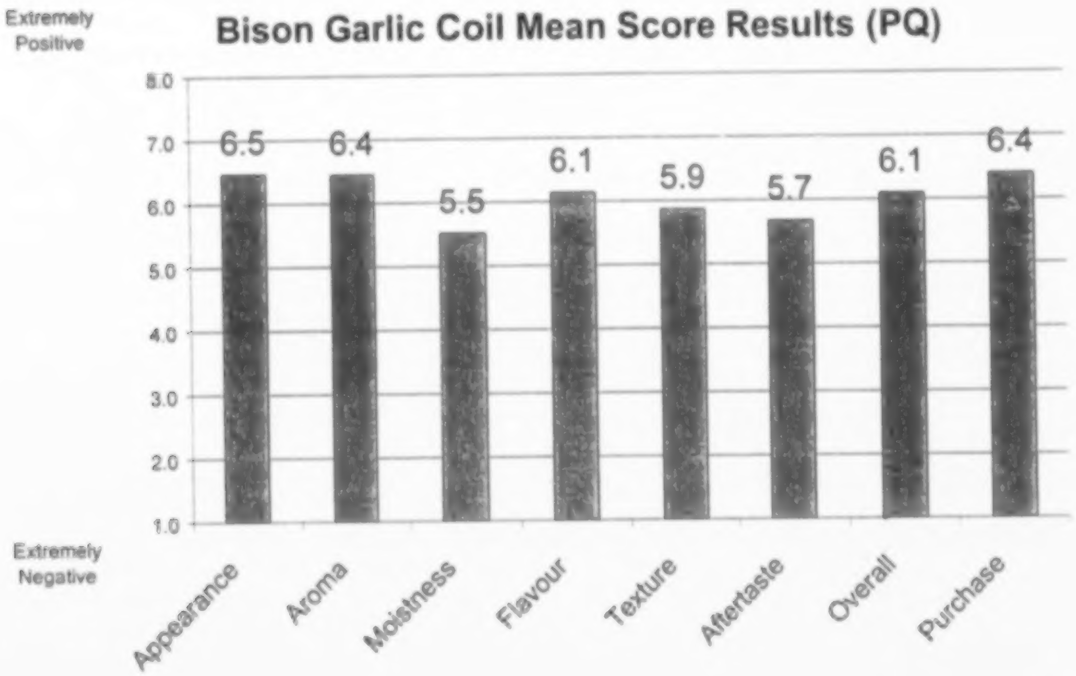
SECTION 3 – RESULTS OF QUÉBEC CONSUMER TASTE PANEL

Results presented here are for the Québec consumer panel. All results are reported as means of the 43 responses for each product evaluation question. The packaging results are also reported. The Bison Garlic Coil results will be presented first, followed by the Seasoned Bison Strips results. Comparisons are provided with the Ontario results from section 1.

3.1 Results for the Bison Garlic Coil

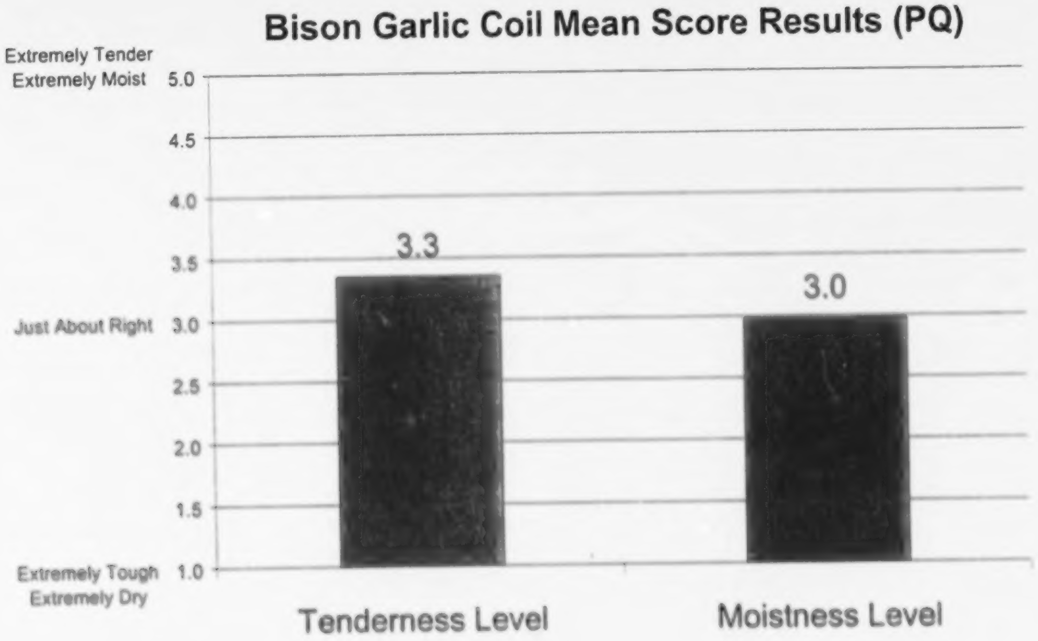
Participants received the Bison Garlic Coil sample first in every panel. This allowed for easier comparisons of the Seasoned Bison Strips as well as extra preparation time. Each participant received three slices of Bison Garlic Coil 0.75cm thick.

Figure 3.1 – Bison Garlic Coil Mean Score Results (8-point scale).



This product scored well in the evaluation. The scores were almost identical between the Québec consumer panel and the Ontario consumer panel in every category.

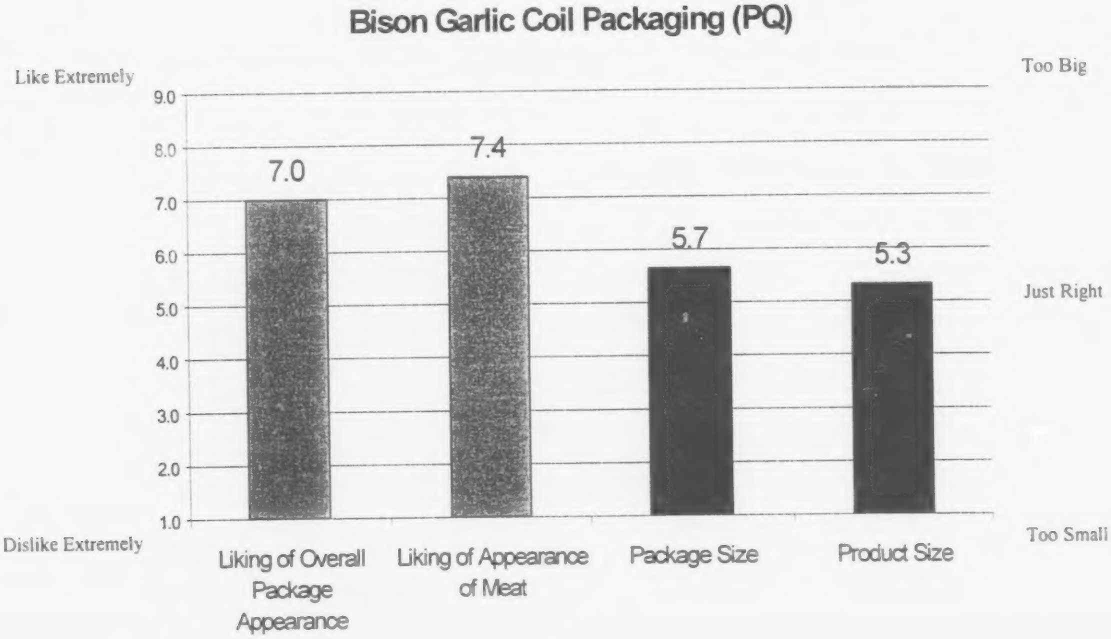
Figure 3.2 – Bison Garlic Coil Mean Score Results (5-point scale).



On the five-point scale, for tenderness and moistness, the product also scored well. The tenderness score indicates that the Bison Garlic Coil met the expectations of the 43 panelists for how tender bison sausage should be (3), by giving the sausage a mean score of 3.3. In Ontario, the same category scored a 3.5. The panelists also enjoyed the moistness by scoring a perfect mean score of 3.0, while Ontario thought the product was a little too moist by giving the category a score of 4.4.

BISON GARLIC COIL PACKAGING

Figure 3.3 – Bison Garlic Coil Packaging.

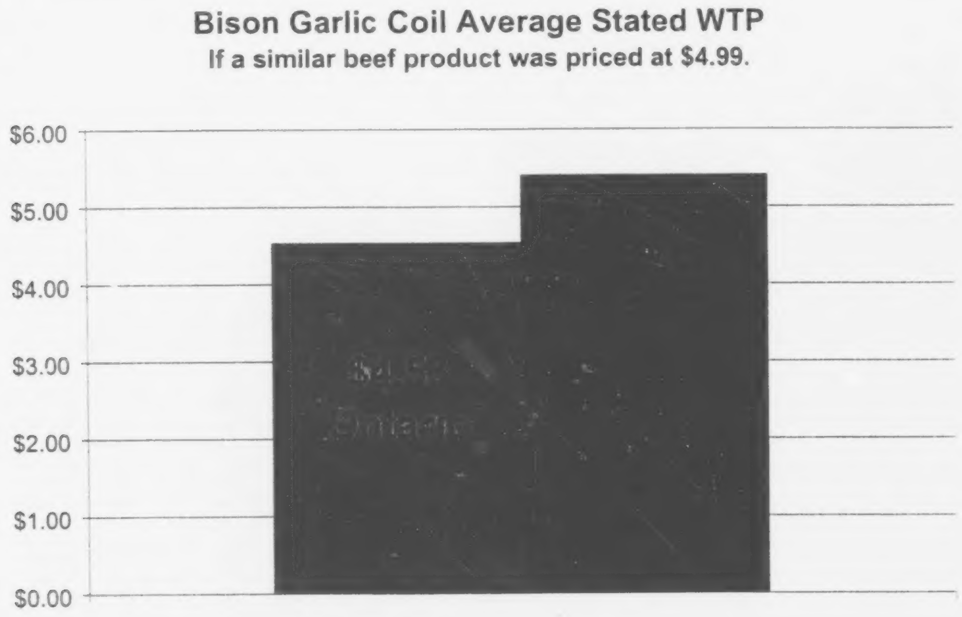


The overall Bison Garlic Coil package appearance received a rating of 7.0 on a 9-point scale. In Ontario the rating was 6.4. The appearance of the garlic coil received a rating of 7.4, while in Ontario the rating was a 7.0. The Package Size received similar ratings in both panels, 5.7 in Québec and 5.6 in Ontario, meaning panelists thought the package to be on the big side. In terms of Product Size the scores were similar again with a 5.3 in Québec and a 5.1 in Ontario, where 5 represents Just Right.

BISON GARLIC COIL STATED WILLINGESS-TO-PAY

After sampling the Bison Garlic Coil and examining the packaging participants were asked what they would be willing-to-pay for the package of Bison Garlic Coil. Participants were told that a similar beef product packaged the same way would cost \$4.99 per package. The mean result in Québec was \$5.41 per 350g package of Bison Garlic Coil and in Ontario the mean result was \$4.53 per 350g package.

Figure 3.4 – Bison Garlic Coil Average Stated WTP.



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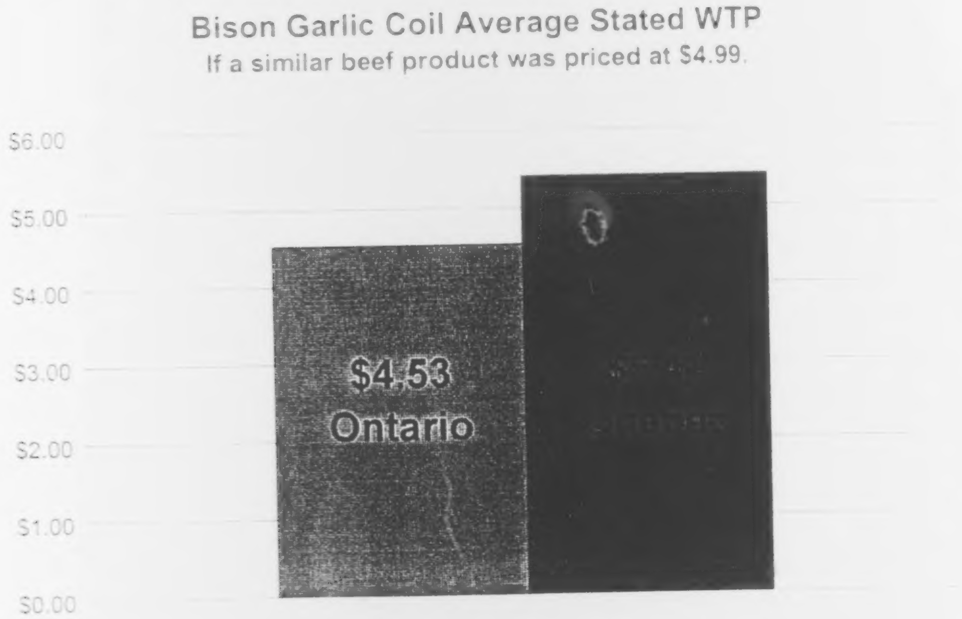
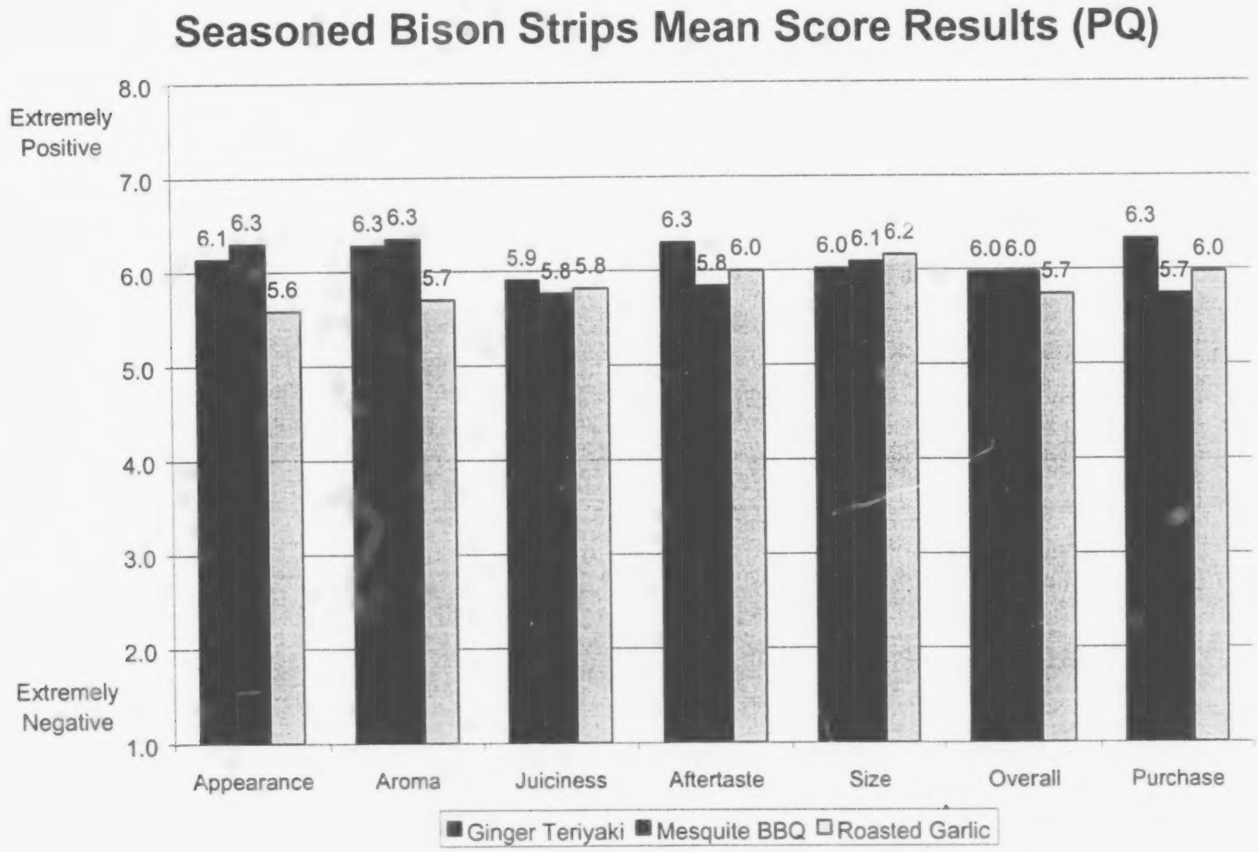


3.2 Results for the Seasoned Bison Strips

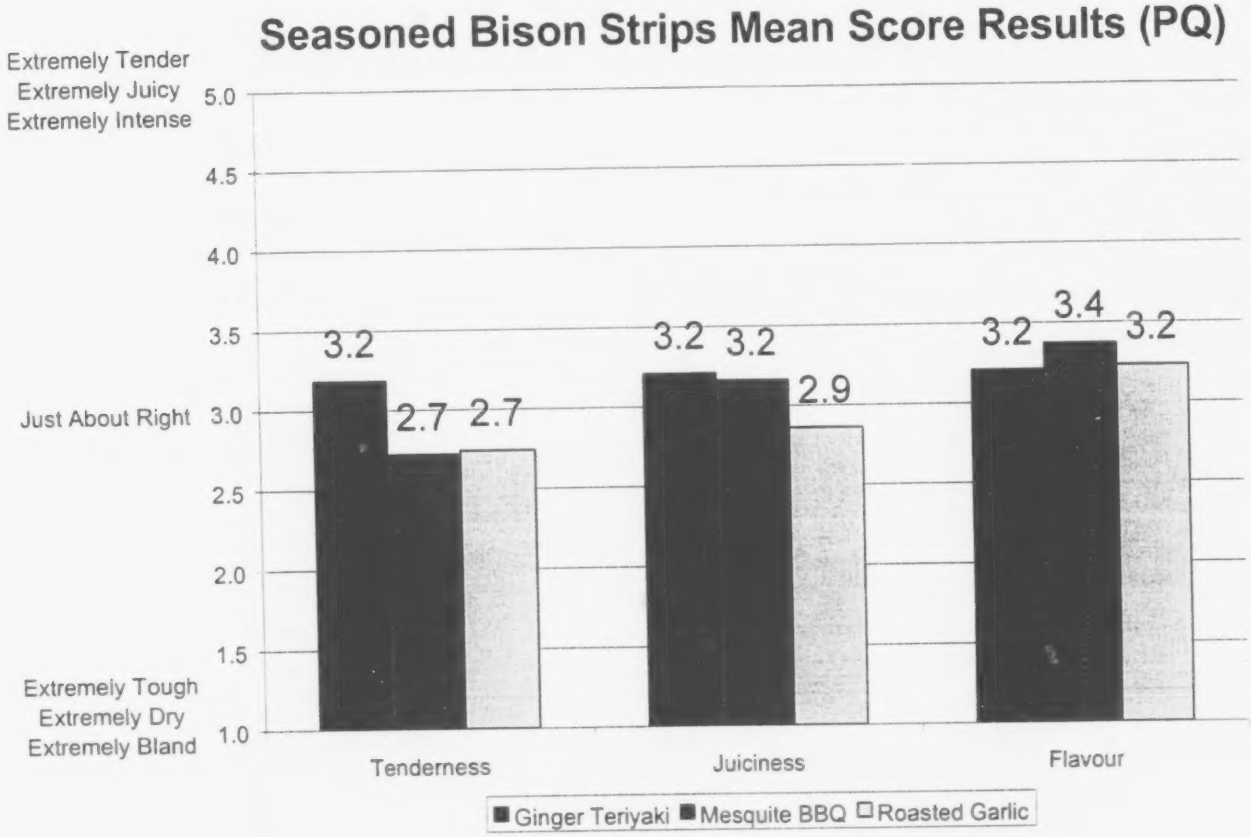
These products were served in a different order to each group of panelists, after the Bison Garlic Coil had been sampled and packaging evaluated. Each flavour of Seasoned Bison Strips was prepared in a separate electric wok and each panelist received 2 to 3 pieces.

Figure 3.5– Seasoned Bison Strips Mean Score Results (8-point scale).



The graph displays all three seasoned bison strips mean score results of acceptability together. This allows for easy comparison of the products. In all categories the Seasoned Bison Strips had higher rankings in Québec than in Ontario.

Figure 3.6 – Seasoned Bison Strips Mean Score Results (5-point scale).



The five-point scale for tenderness, juiciness and flavour reveals that participants thought the products were Just About Right in all categories. These scores are also similar to the results of the Ontario consumer panel.

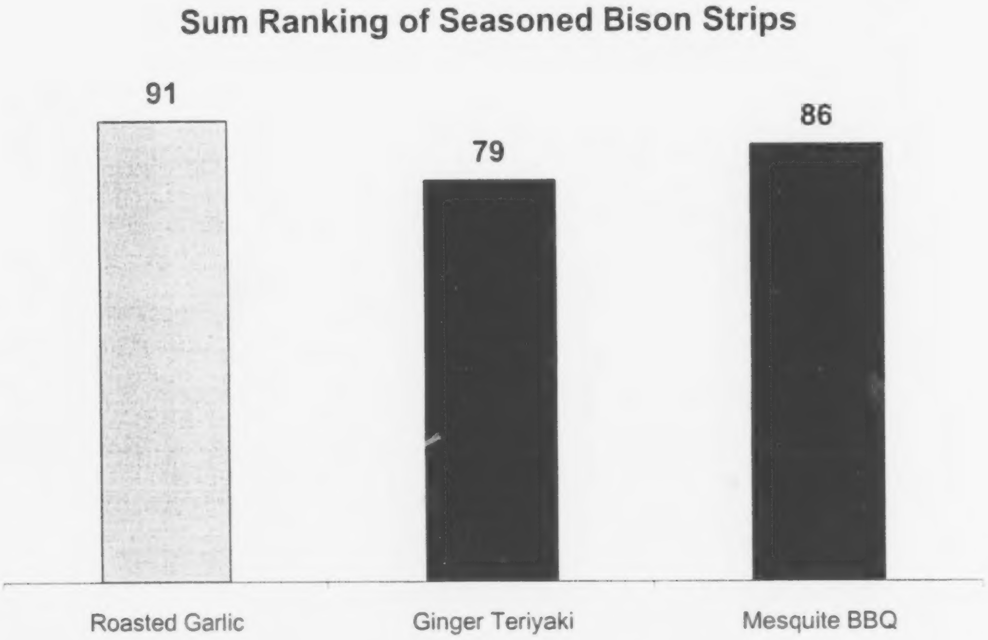
SEAONSONED BISON STRIPS SIZE ACCEPTANCE

Strip size acceptance was also explored by asking participants to provide additional comments if they scored this category a value of less than 5 on the 8-point scale. Again, as in the Ontario panels, there was confusion by some panelists about what meals the Seasoned Bison Strips would be best suited for. Out of 129 responses to the strips size question, there were 14 responses scoring less than 5. When asked for additional comments most people reported that the strips were too small and they were maybe suitable for children.

SEASONED BISON STRIPS RANKING

The seasoned bison strips were also ranked by each panelist. Figure 3.7 displays the sum ranks of the three products. Note that the product with the **lowest** score (Ginger Teriyaki) was the most liked product.

Figure 3.7 – Seasoned Bison Strips Ranking.

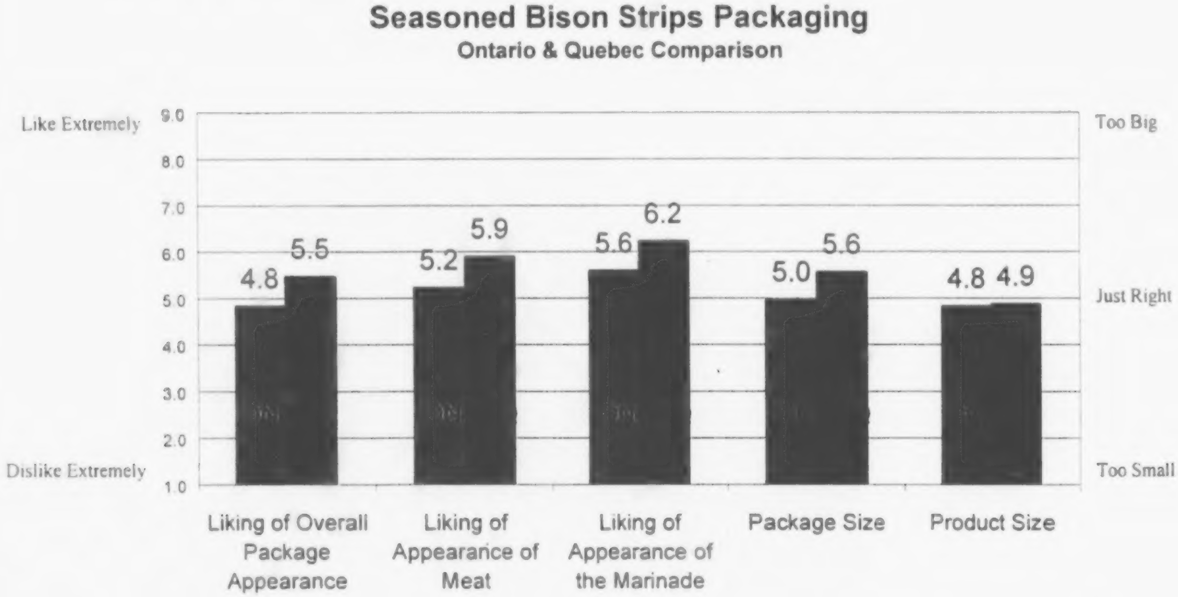


These results show that, similar to the Ontario panel, the least like flavour was the Roasted Garlic Seasoned Bison Strips. However, unlike Ontario, Ginger.Teriyaki was the most liked product and Mequite BBQ was second. In Ontario, Mesquite BBQ was the best ranked product and Mesquite BBQ was second.

SEASONED BISON STRIPS PACKAGING

Between each sample of Seasoned Bison Strips the panelist reviewed the packaging for that product. Unfortunately, the packaging provided for these panels was not the final packaging design intended for the retail trials but is the same as was used for the Ontario panels. Figure 3.8 presents the aggregated results for the evaluation of the seasoned bison strips packaging for both locations.

Figure 3.8 – Seasoned Bison Strips Packaging.



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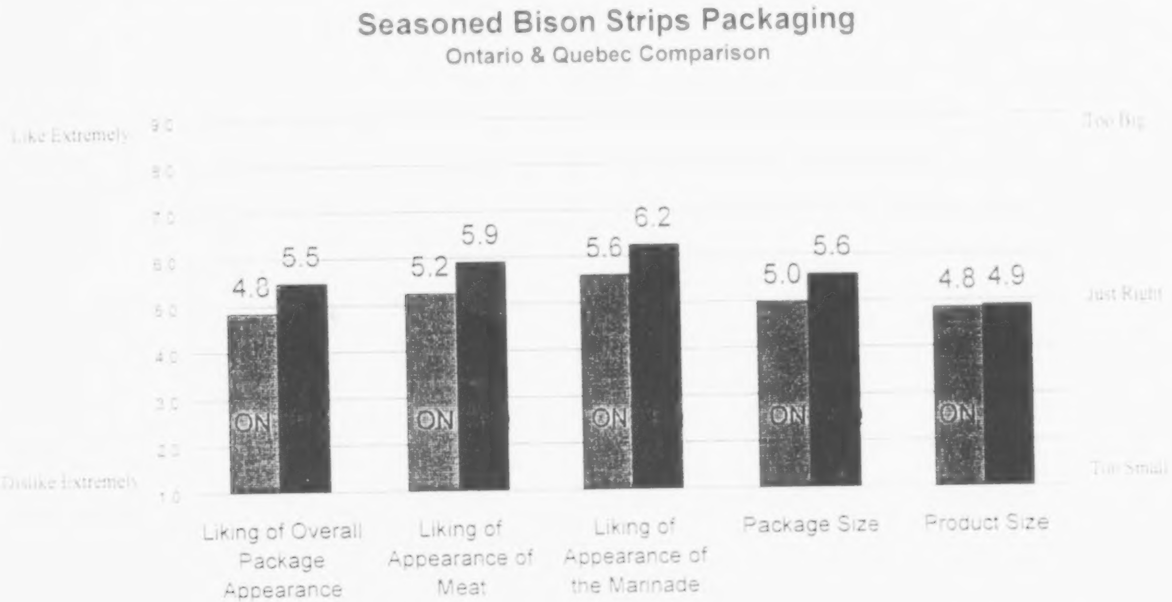
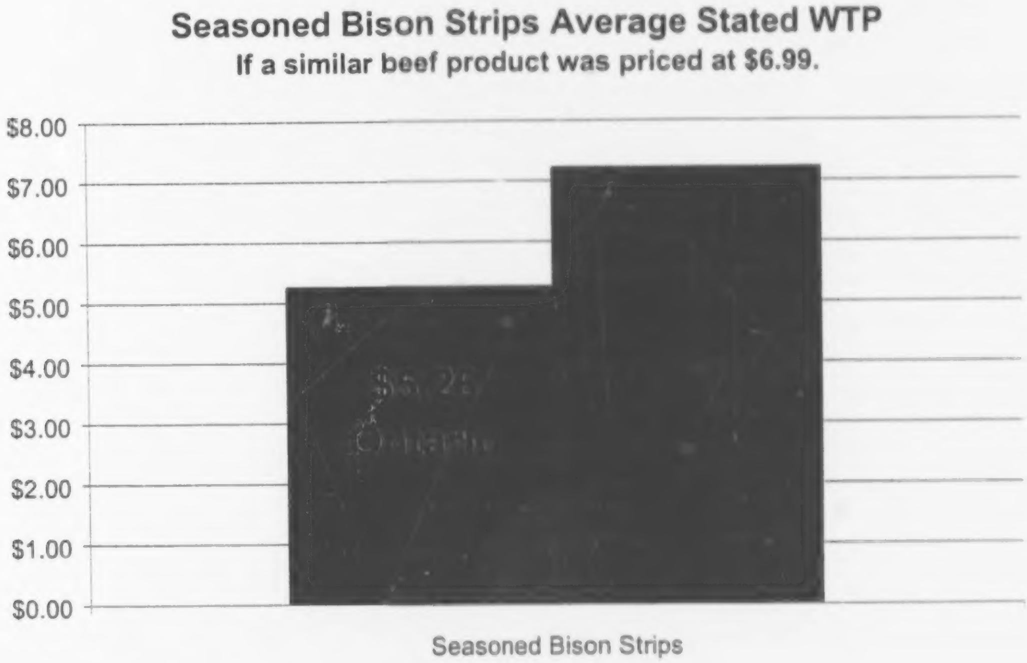


Figure 3.8 shows that the Package Size and Product Size score approximately Just Right for both locations. The categories of Overall Package Appearance, Appearance of Meat and Appearance of Marinade all ranked higher for the Québec consumer panel than Ontario.

SEASONED BISON STRIPS STATED WILLINGNESS-TO-PAY

Panelists were asked to state their willingness-to-pay if a similar beef product was priced at $6.99/450g package. The mean willingness-to-pay per product for Québec was higher than the stated beef price and was $7.22/450g package. This can be compared to the overall average for Seasoned Bison Strips in Ontario at $5.26/450g package.

Figure 3.9 – Seasoned Bison Strips Stated Average WTP.



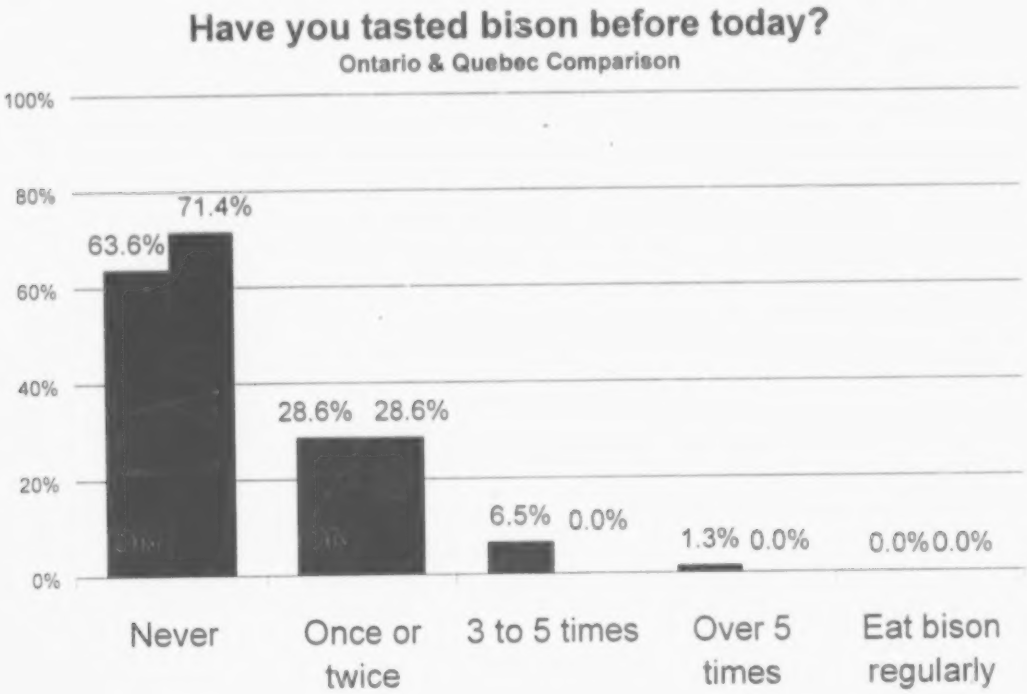
SECTION 4 – CONSUMER KNOWLEDGE OF BISON – ONTARIO & QUÉBEC

Consumer taste panel participants were asked questions about their knowledge and experience with bison. Each participant was asked four specific questions about bison and an additional question concerning organic purchases. The following pages report the responses for both Ontario and Québec.

4.1 Questions to Assess bison knowledge

The first bison related question asked of the participants was "**Have you ever tasted bison before? (not including today).**" The graph below compares the results in both locations. The Québec panel had a higher percentage of respondents who had never tried bison before.

Figure 4.1 – Bison Consumption.



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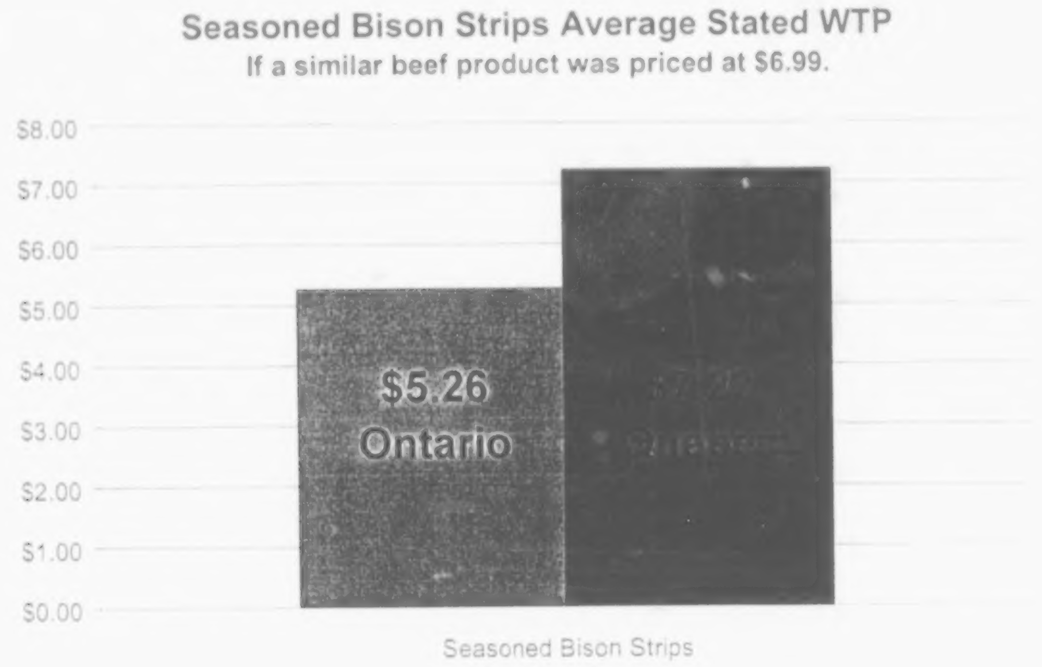

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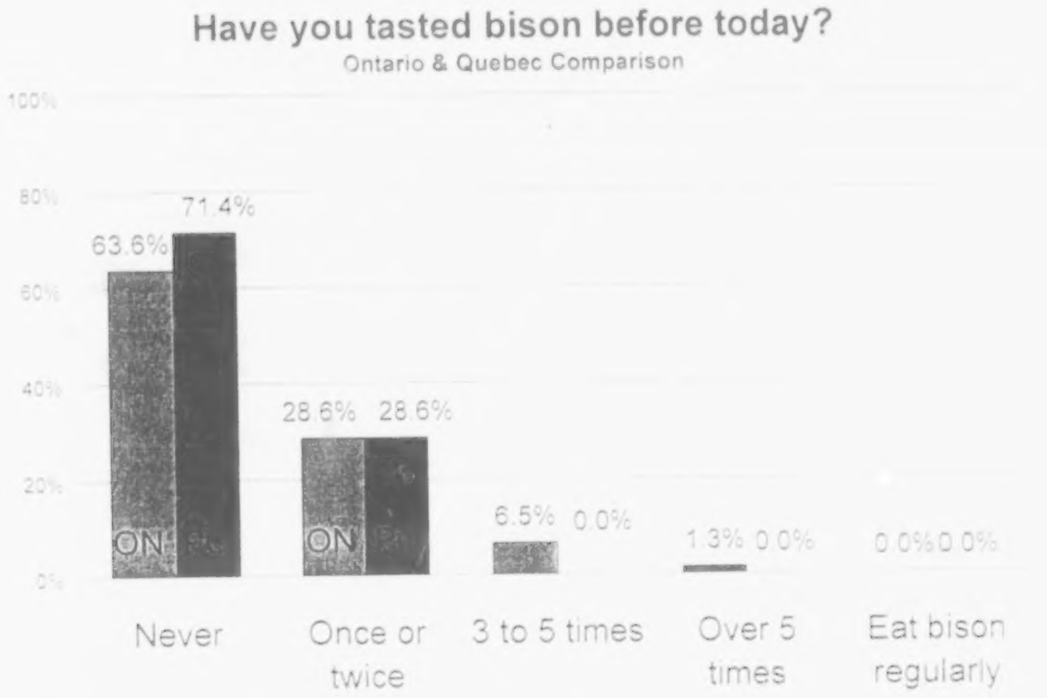
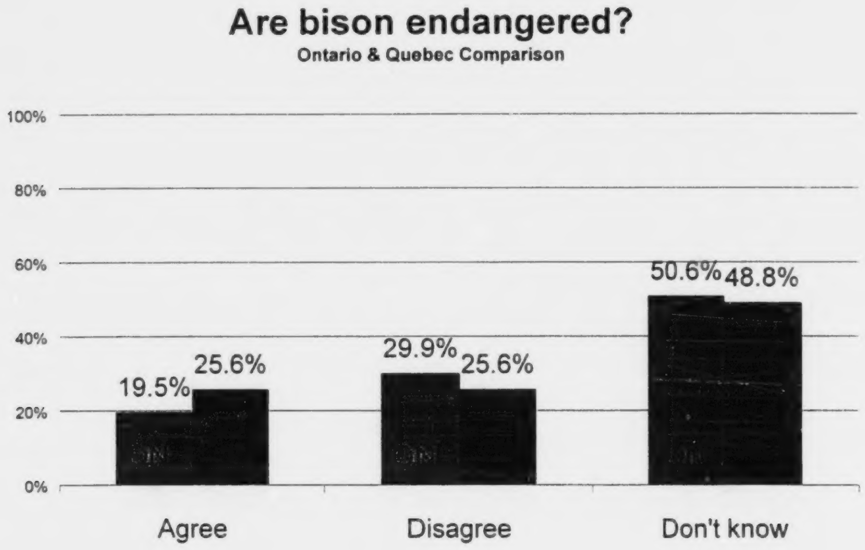


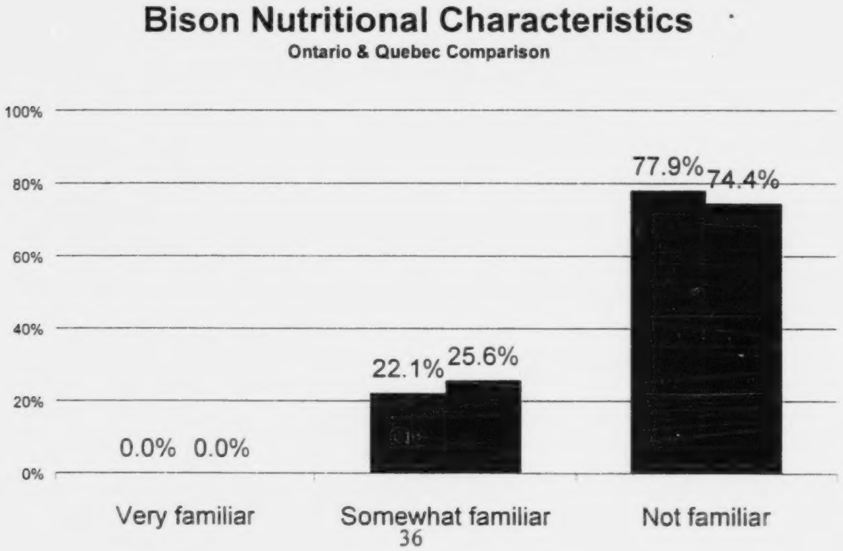
Another question posed to participants was "**To what extent do you agree or disagree with this statement – "Bison are an endangered species"**". The majority in both locations didn't know.

Figure 4.2 – Are bison endangered?



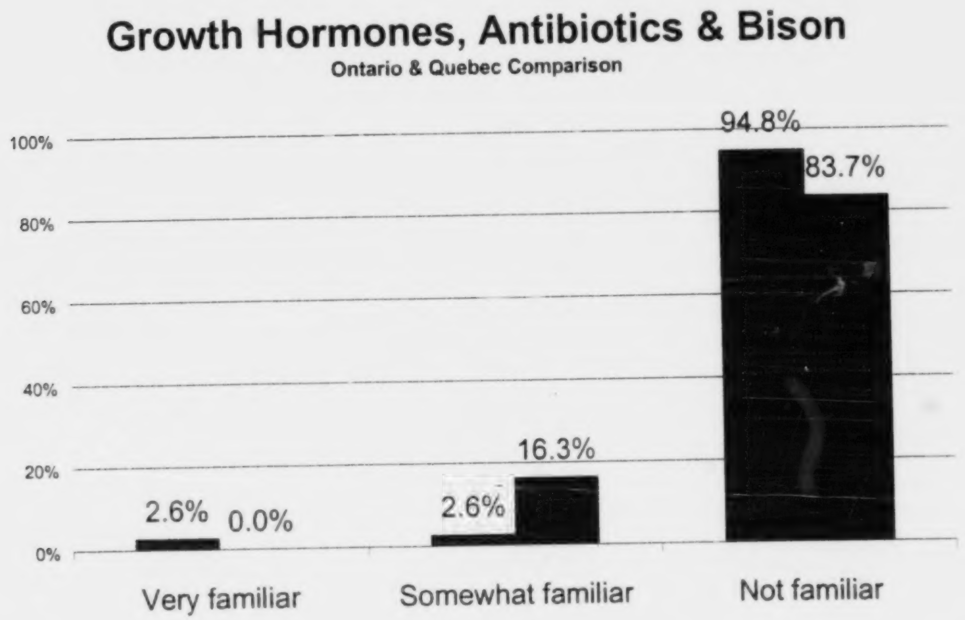
A third question asked was "**Before today, how much did you know about the nutritional characteristics of bison meat?**" The majority of participants in both locations are not familiar with bison meat nutrition qualities.

Figure 4.3 – Bison nutritional characteristics.



The final question answered by participants was "**Before today, how much did you know about the use of growth hormones and antibiotics in the production of bison?**" Panelists in both locations know little about the production practices of bison ranchers.

Figure 4.4 – Growth hormones, antibiotics & bison.



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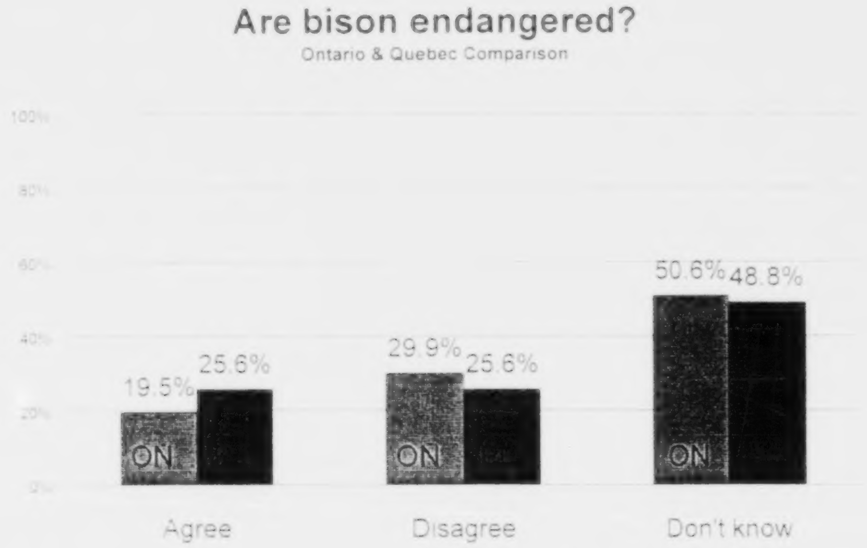

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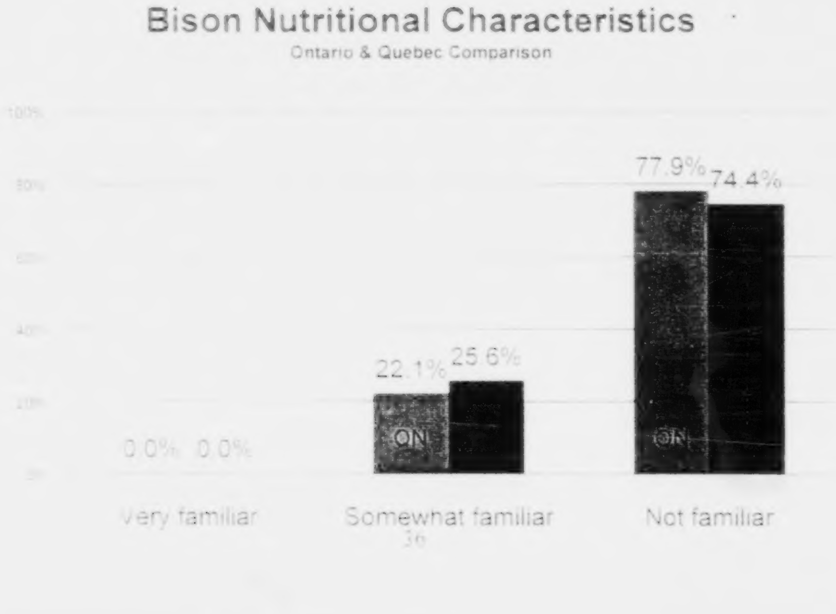

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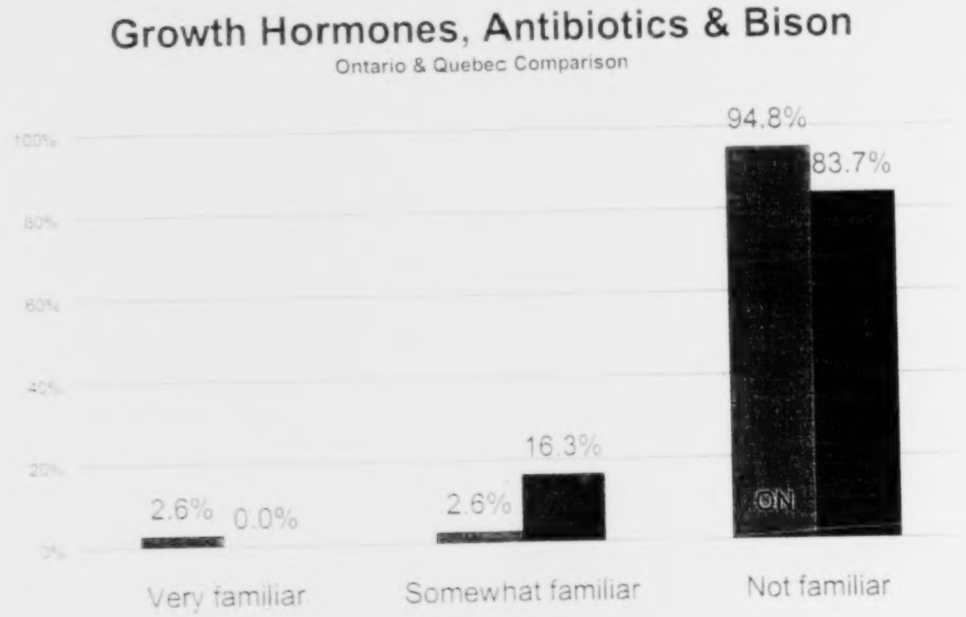
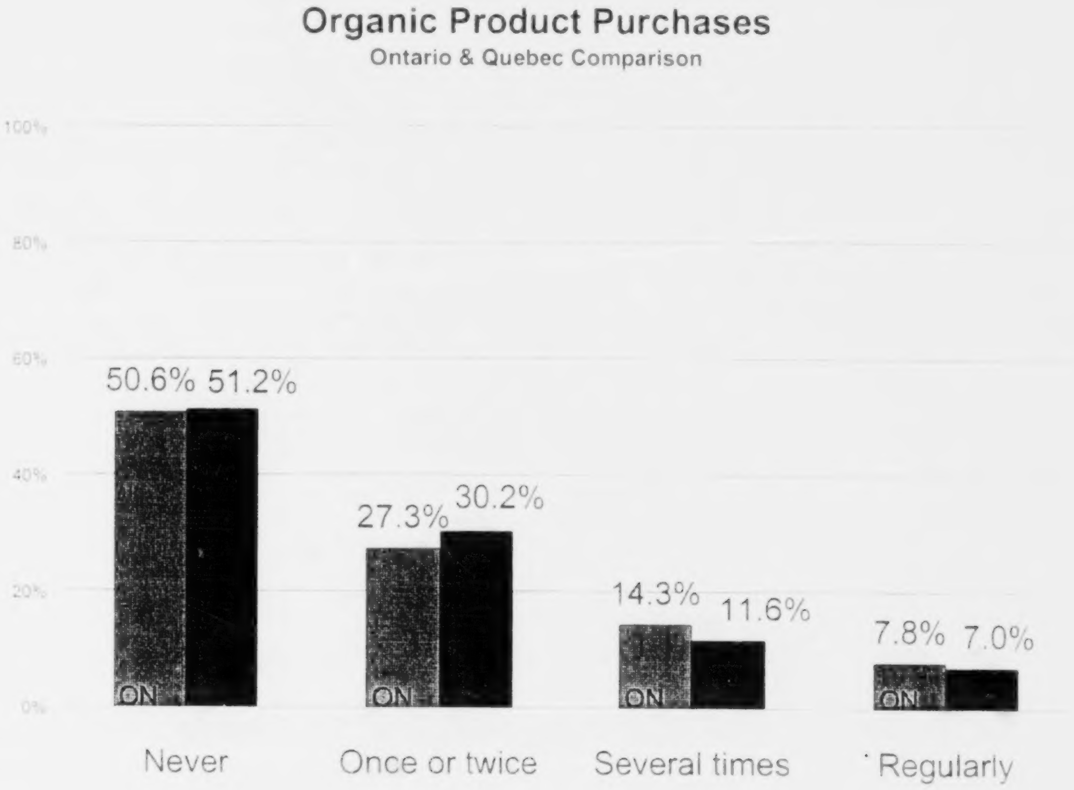


4.2 Organic product purchases

Taste panel participants were also asked about their organic product shopping habits. The question posed was "**Have you ever purchased certified organic or "natural" meat products?**" The majority of panelists in both locations responded that they had never purchased certified organic or "natural" meat products.

Figure 4.5 – Organic Product Purchases.



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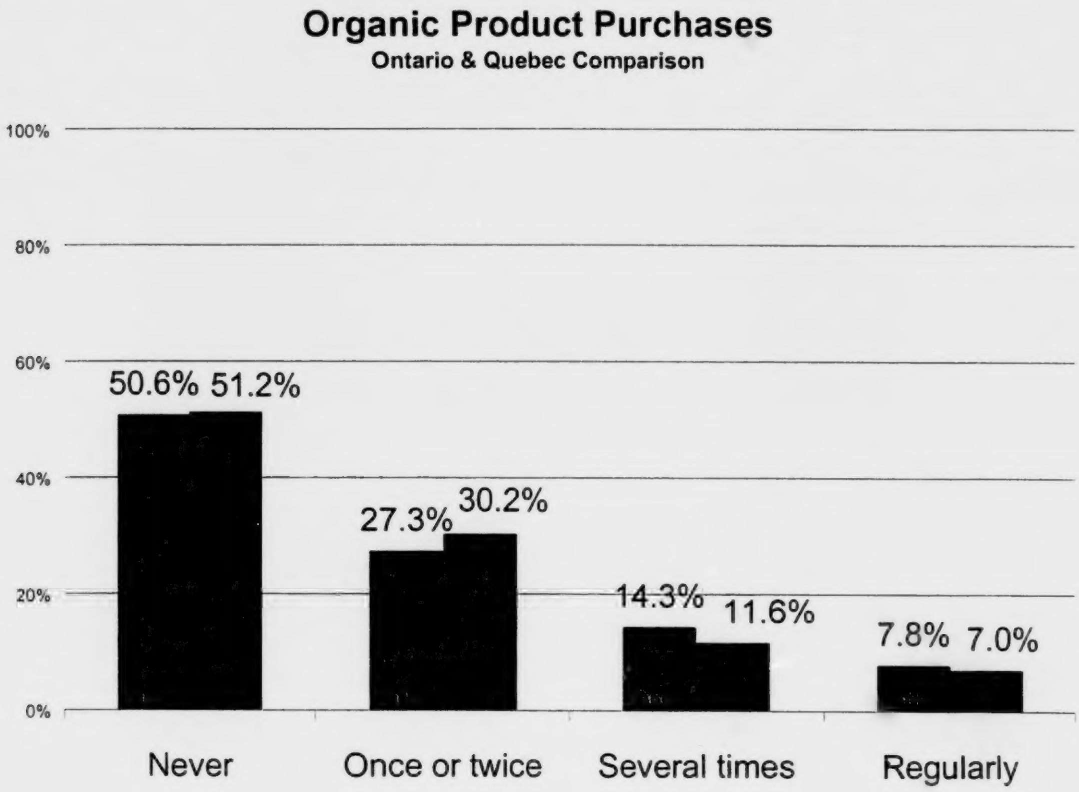


SECTION 5 – SAMPLE DEMOGRAPHICS

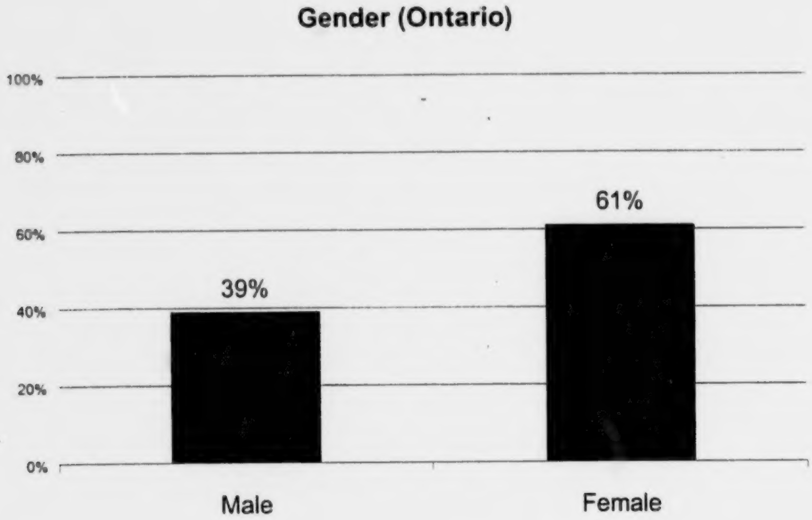
5.1 Demographics of the Ontario Panelists

To gain insight into the results of the taste panels it is important to have demographic information on the panelists. The following information concerns the Ontario panelists.

Presented below is the demographic information of the Ontario sample (n=77). There were six questions asked to gather demographic information. The results will be displayed here in table and graphical format.

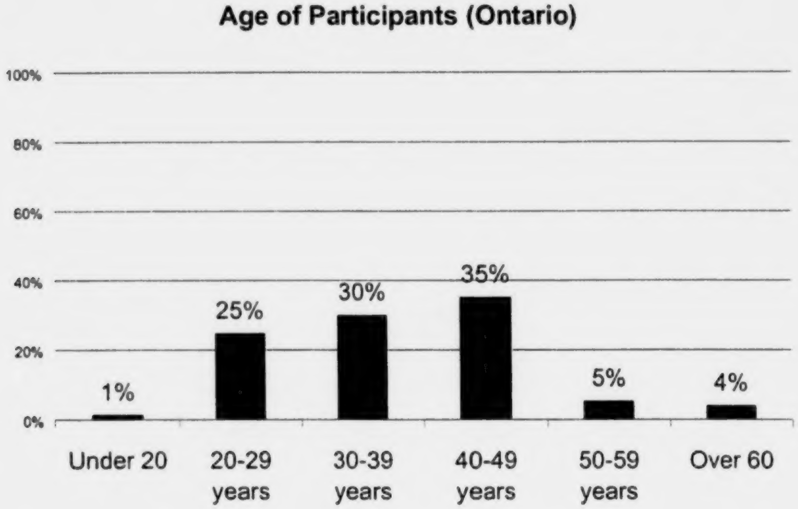
Gender	39%	Male
	61%	Female

Figure 5.1 – Gender (n=77)



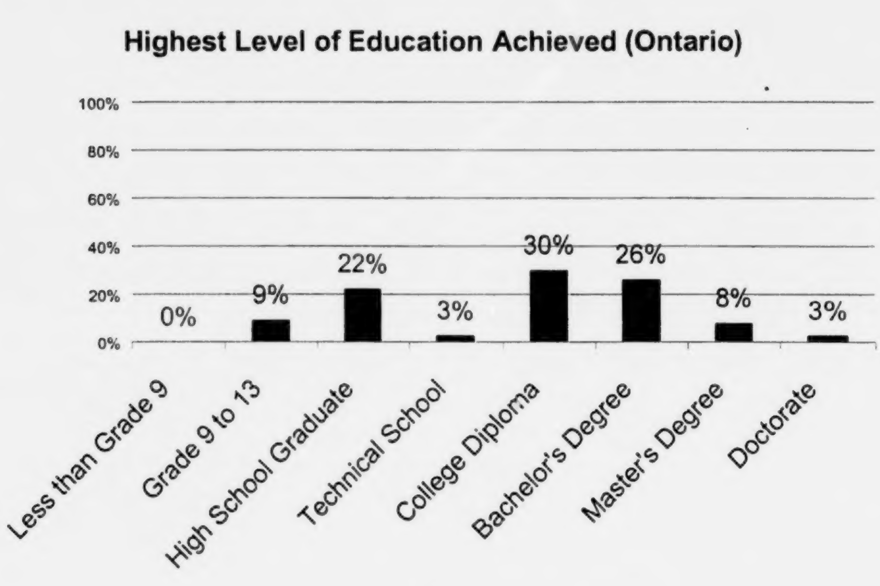
Age	1%	under 20	35%	40-49 years
	25%	20-29 years	5%	50-59 years
	30%	30-39 years	4%	over 60

Figure 5.2 – Age (n=77)



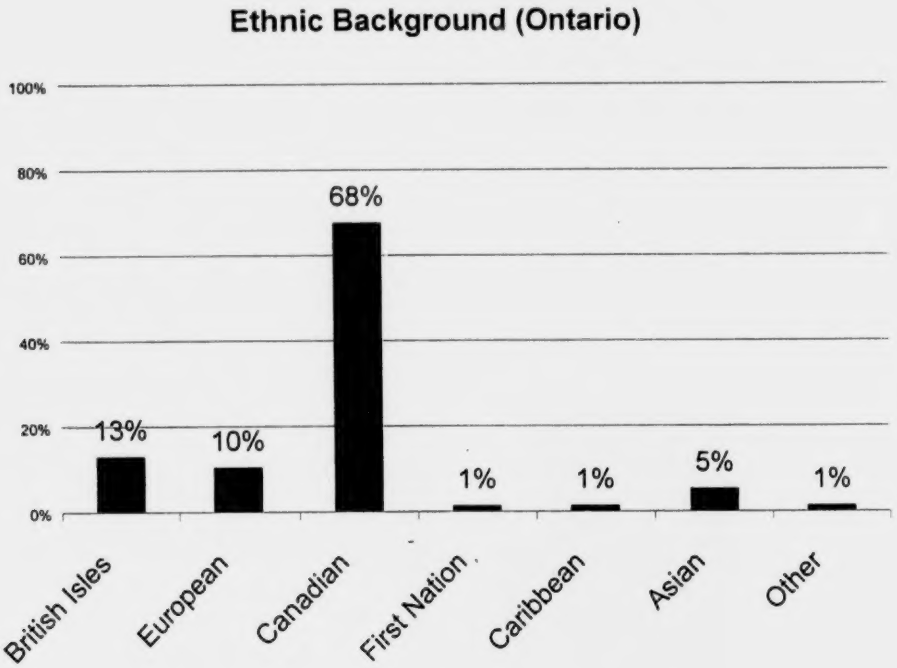
Education	9%	Grade 9 to 13	30%	College Diploma
	22%	High School Graduate	26%	Bachelor's Degree
	3%	Technical School	8%	Master's Degree
			3%	Doctorate

Figure 5.3 – Education. (n=77)



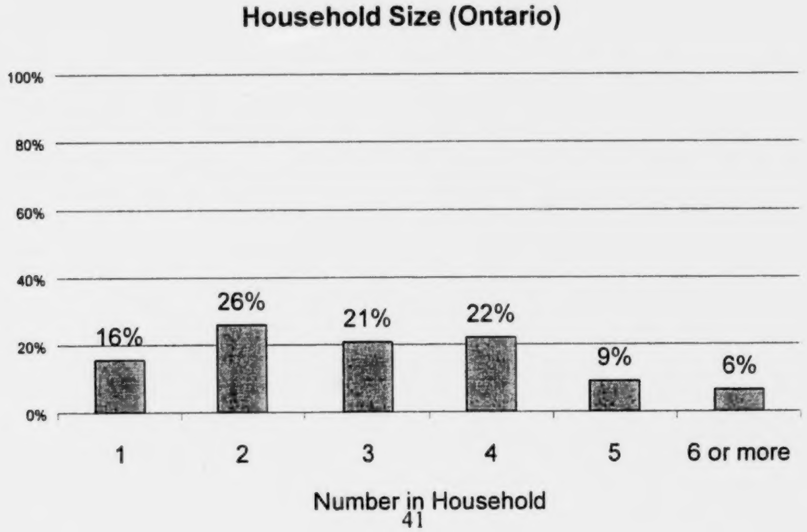
Ethnic Background	13%	British Isles	1%	First Nation
	10%	European	1%	Caribbean
	68%	Canadian	5%	Asian
			1%	Other

Figure 5.4 – Ethnic Background. (n=77)



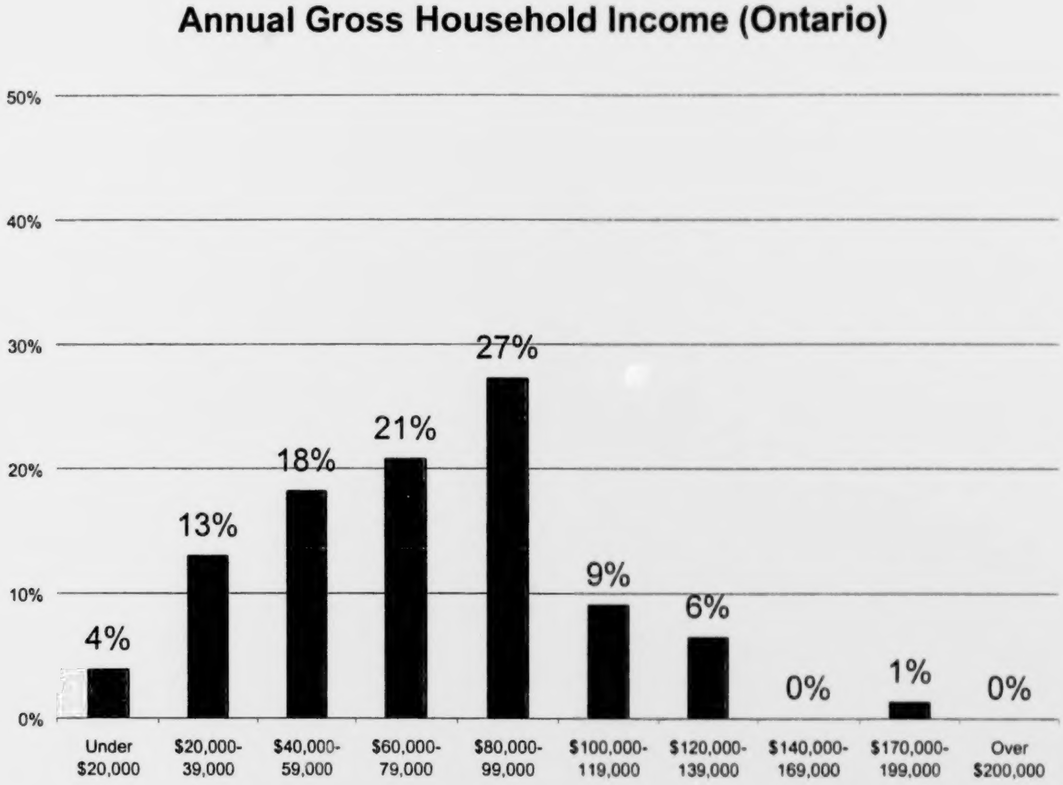
Household Size	16%	1	22%	4
	26%	2	9%	5
	21%	3	6%	6 or more

Figure 5.5 – Household Size (n=77)



Annual Gross Household Income	4%	under $20,000	27%	$80,000-99,000
	13%	$20,000-39,000	9%	$100,000-119,000
	18%	$40,000-59,000	6%	$120,000-139,000
	21%	$60,000-79,000	1%	$170,000-199,000

Figure 5.6 – Annual Gross Household Income (n=77).

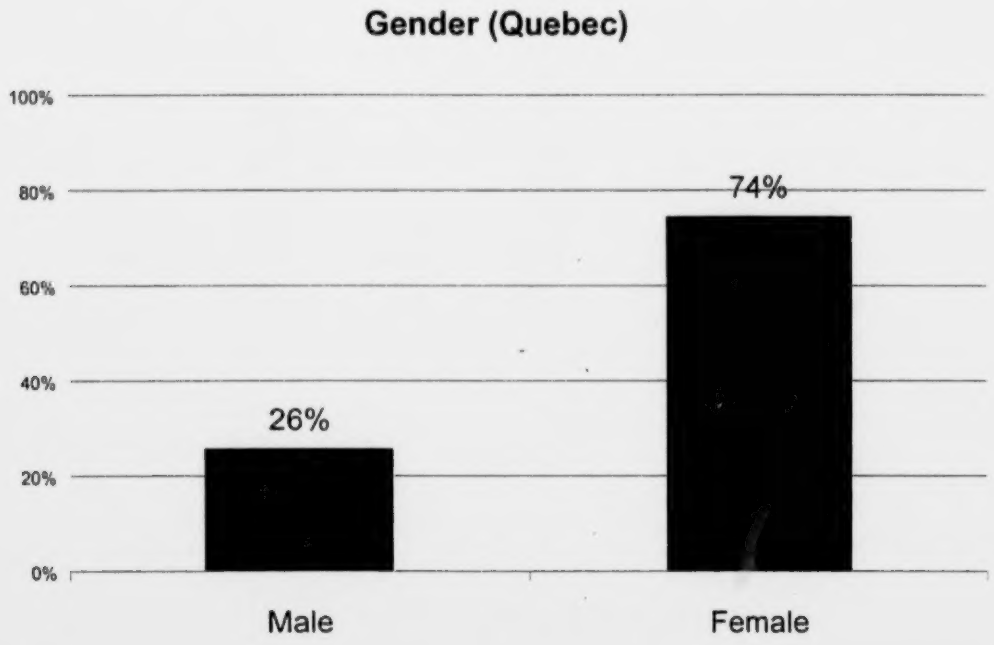


5.2 Demographics of the Quebec Panelists

The following information reports the demographic break-down of the Québec sample (n=43).

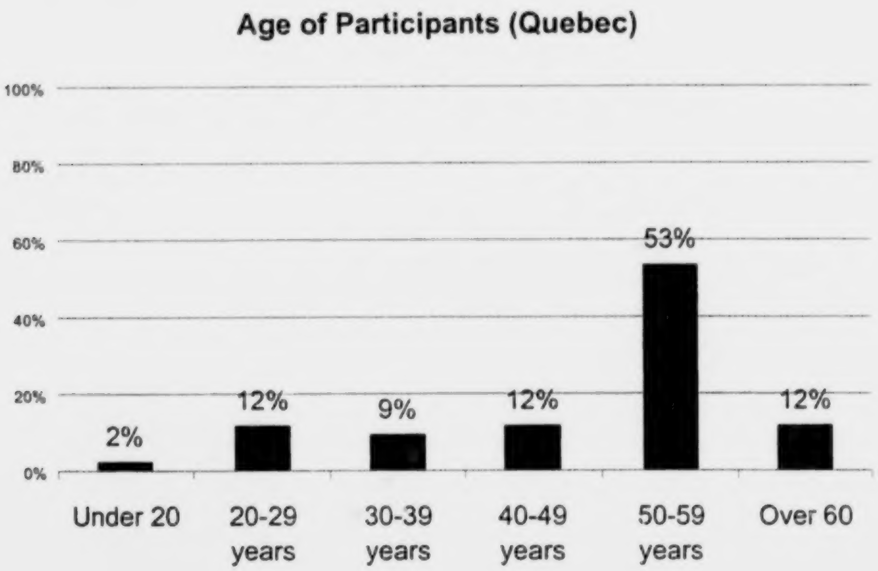
Gender

Figure 5.7 – Gender (n=43)



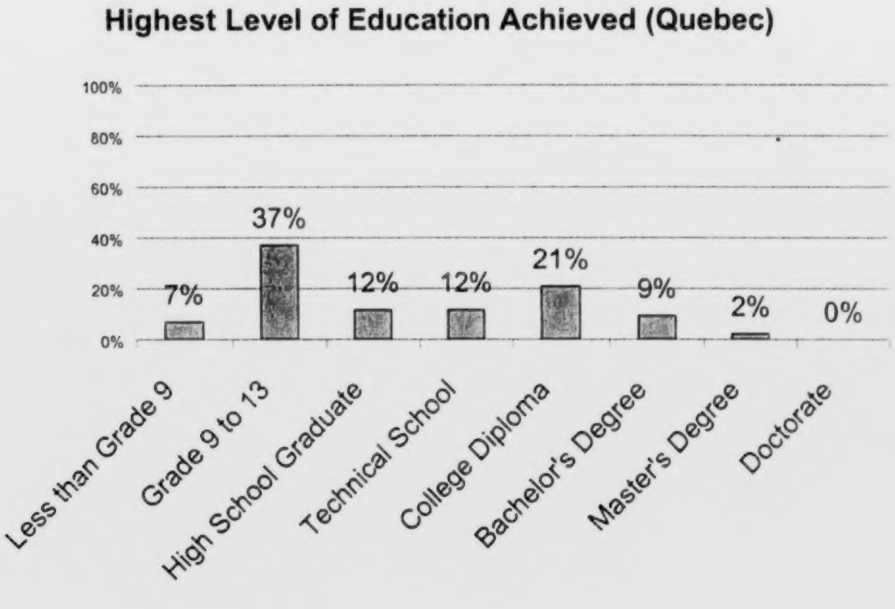
Age

Figure 5.8 – Age (n=43)



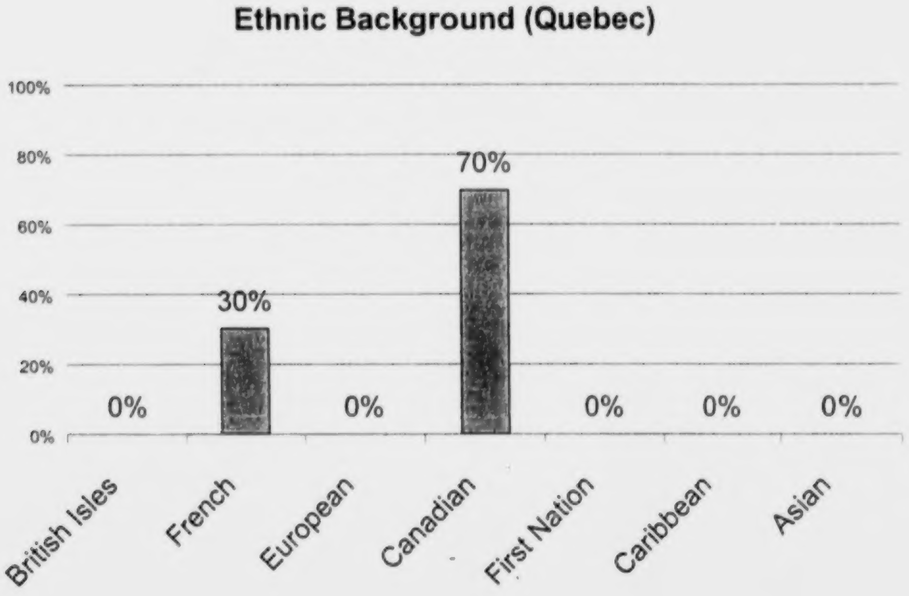
Education

Figure 5.9 – Education. (n=43)



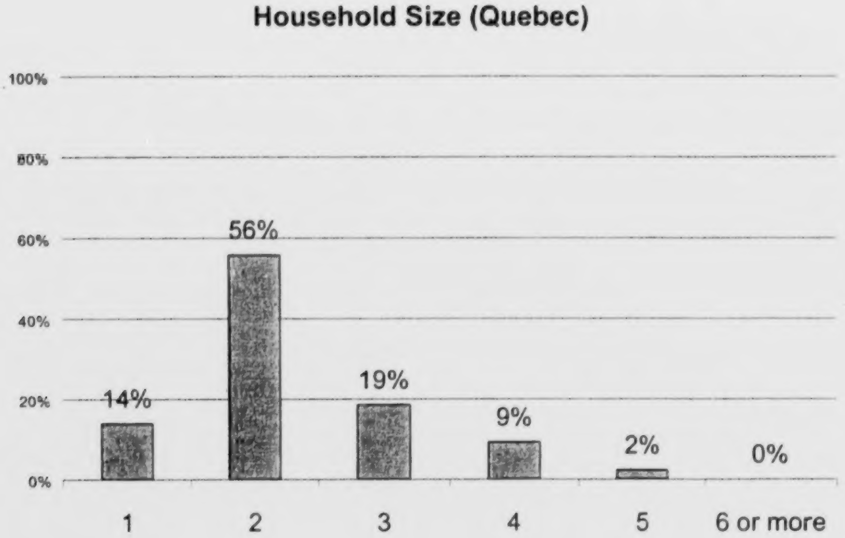
Ethnic Background

Figure 5.10 – Ethnic Background. (n=43)



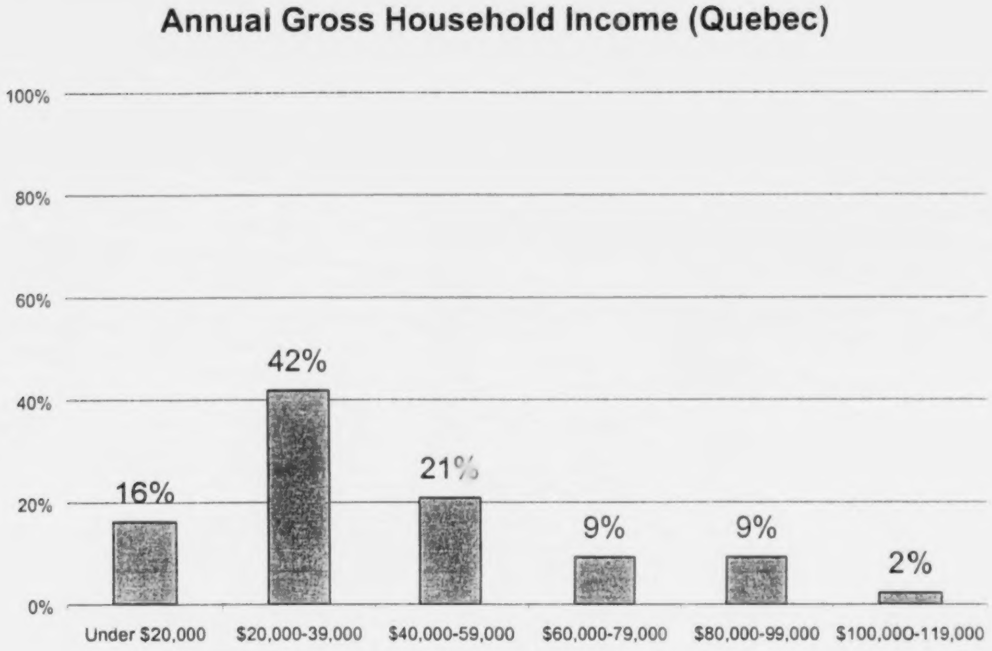
Household Size

Figure 5.11 – Household Size (n=43)



Annual Gross Household Income

Figure 5.12 – Annual Gross Household Income (n=43)



5.13 Comments on Demographics

Comparing the Québec and Ontario panels, it is clear that the Québec sample had a higher proportion of female participants than the Ontario panel. The Québec panelists were also older, were less educated, had smaller families and had lower household incomes. In both locations approximately 70% of the respondents indicated that their ethnic background was "Canadian". The balance in Québec reported a French ethnic background and in Ontario the balance was primarily split between British Isles, European and Asian but no French background was reported.

BISON MARKETING:
UNDERSTANDING THE CONSUMER

Final report prepared for the Saskatchewan Bison Association

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BISON MARKETING: UNDERSTANDING THE CONSUMER

EXECUTIVE SUMMARY

This report is a summary of phases 1 and 2 of a major consumer research initiative to evaluate Canadian consumer attitudes towards bison. The key objectives of these phases were to assess consumer preferences and willingness-to-pay for six value-added bison products[1], explore the potential for further value-added product development, identify specific preferences and attitudes of consumer segments, and evaluate consumer responses to information about bison. To achieve these goals, consumer panels were undertaken through 2002 and early 2003 in five Canadian locations in Saskatchewan, Alberta, British Columbia, Ontario and Québec for phase 1 and in Ontario and Quebec for phase 2.

In phase 1 consumer panelists completed three tasks including tasting and evaluating four value-added bison products, completion of a written survey and participating in an economic bidding experiment designed to measure the effect of different information on willingness-to-pay for bison. From the results of phase 1, it was determined that subsequent research would focus on markets in Ontario and Québec. It was also decided that two other further processed bison products would be developed, a bison garlic sausage and three flavours of seasoned bison strips. Panelists in phase 2 tasted and evaluated the garlic sausage and strips and completed a written survey. In addition to the taste panel, some of the Ontario panelists took part in an economic bidding experiment designed to measure the effect of different information formats (nutritional information, production method information and testimonial information) on willingness-to-pay for the bison strip product. This report builds on the analysis presented in two preliminary reports that summarized the sensory evaluations of the products (Hobbs and Sanderson, 2002; Hobbs and Cunningham, 2003).

When developing a marketing strategy it is important to understand the information consumers require and how this information influences the decision to purchase and consume a product. Consumers gather, interpret and act upon information available to them. However, this information is not costless. Therefore it is necessary to understand the consumer's definition of quality and the attributes that influence the purchase decision when undertaking product development and marketing strategies. Detailed surveys gathered a large amount of information on consumer attitudes towards bison and meat products in general.

When respondents in phase 1 were asked about the importance of nutritional content almost 70 % either agreed or strongly agreed with the statement that nutritional content is important when purchasing a meat product. This suggests there is a potential advantage for the bison industry in promoting nutritional attributes if these benefits can be demonstrated scientifically and communicated credibly to consumers. As expected, when asked to agree or disagree with the statement that when buying a meat product to cook at home they are more likely to buy it if it is available where they regularly shop, almost 90% of respondents agreed or strongly agreed with this statement. When asked where they were most likely to purchase a specialty meat product the answer most frequently given (57%) was the grocery store. The importance of convenience has implications for the distribution of new bison meat products and should be considered in any marketing strategies adopted by the industry. Conversely only 22% of respondents agreed or strongly agreed with the statement that brand name is important when purchasing a meat product to cook at home.

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[1] The products were bison burger, kebab, stew and deli meat in phase 1, bison garlic sausage and marinated bison strips in phase 2.

An estimated 81% of phase 1 respondents either agreed or strongly agreed with the statement that when purchasing a meat product to cook at home they compare prices. Given that bison tends to be sold at prices higher than beef, it is important to remember that consumers consider themselves to be relatively price conscious when it comes to purchasing meat products. Survey respondents were asked to agree or disagree with the statement that when purchasing a meat product to cook at home they look for meat products that will be a novel (unusual or unique) eating experience. The same question was asked with respect to meat eaten in a restaurant. Asking this question was one way to assess whether the image of being "exotic", "unique" or "special occasion" is important to consumers when purchasing meat to cook at home. For home consumption, there was no clear consensus on this point. It may be that it depends on the situation, such as regular family meal versus entertaining. Compared with home consumption, there seemed to be more agreement when considering restaurant consumption, with almost 60% of respondents either agreeing or strongly agreeing. These results suggest that a marketing campaign based on bison as a novel eating experience may be more suited to products targeted at the food service (restaurant) market. This underscores the importance of evaluating the likely competitiveness of a new bison product and marketing strategy in the market being targeted prior to launch.

A cluster analysis based on respondents' rating of the importance of price and a number of health, convenience and image attributes revealed groups of consumers with quite distinct attitudes. Three of the five consumer segments identified prioritised specific health attributes when purchasing meat. One group emphasised the importance of looking for a unique/novel eating experience and the appeal of a meat product native to North America while the fifth group valued convenience. Identifying target market segments interested in the unique qualities that bison has to offer is key to developing a successful marketing plan.

Information gathered on consumers' perceptions of bison suggest an overall positive image of the bison industry, a preference for the name bison over buffalo, and a belief that bison is a healthy meat to consume. There were also perceptions by a notable number of those surveyed that bison can be a dry, tough and gamey meat. Tasting of the different meat products in phases 1 and 2 brought mixed responses that varied by product and location. Saskatchewan and Alberta were the most receptive to the bison products, while BC was the least receptive.

To determine where bison "fits" relative to other meat products phase 1 panelists were asked to evaluate the similarity of 15 meat products. This evaluation revealed that based on taste and appearance, bison is considered to be more similar to beef than the other products evaluated. However when respondents were asked to consider a number of specific attributes: price, "healthiness", taste, whether it was a special occasion meat product, and whether the product was more likely to be eaten at home or in a restaurant, the relationship between the bison products and the other products changed. This suggests that there is an opportunity to distinguish bison from other close substitutes by influencing consumers' images of bison.

In Saskatchewan and Alberta, where 73% and 71% of respondents respectively had tried bison before, the sensory results from phase 1 were quite positive. In British Columbia and Ontario the sensory results for the burger and kabob were less favourable; 31% and 33% of respondents respectively had tried bison before. Comparison of the average attribute ratings show that Saskatchewan and Alberta gave the bison products higher average ratings based on taste, price, special occasion meat, and were more likely to eat the products in a restaurant versus home consumption. Alberta and Saskatchewan respondents also perceived bison meat to be healthier relative to other meats than those in British Columbia and Ontario. Respondents were asked to state their willingness-to-pay for the products they tasted during the study. The premiums respondents were willing to pay varied considerably between location and between the products. These variations suggest that not all bison products will be able to command the same price premium relative to beef and in some locations those premiums are expected to be small.

Experimental auctions (laboratory markets) were used in both phases 1 and 2 to gather more information about willingness-to-pay for bison products. Different formats were used for the experimental auction in each phase so as to gather different types of information. The bidding experiments revealed that specific groups of respondents are willing to pay more for information about health attributes such as a relatively lower fat content or produced without growth-promoting hormones. By offering four different bison sandwiches with different attributes related to reduced fat content and 'hormone-free' it was possible to estimate consumer willingness-to-pay for these attributes.

Participants, on average, were willing to pay more for a bison meat sandwich that is 60% lower in fat (Sandwich 2) than for a bison sandwich for which this information could not be verified (Sandwich 1). The bison sandwich that was verified as having been produced without the use of growth hormones (Sandwich 3) also appeared to command a premium on average. Consumers valued the bison sandwich that was 60% lower in fat and produced without the use of growth hormones (Sandwich 4) more than any of the other three bison sandwiches.

Regression analysis of the auction results allows us to see which factors influenced people's bids for the different bison sandwiches. Factors that were significant in influencing people's bids included gender, whether they had previously tried bison, how much they liked the bison deli meat in the sensory evaluation, and membership of identified consumer segments, such as the "Have it All at a Reasonable Price" group. Consumers in BC bid significantly lower than those elsewhere. Other factors that were important included the age of the participant and their education level. Willingness-to-pay was statistically higher for two of the bison sandwiches – the sandwich labelled as produced without hormones and the sandwich labelled as 60% lower in fat and produced without the use of growth hormones.

Phase 2 included an economic bidding experiment that investigated the affect of different information formats (nutritional information, a taste testimonial and information about 'natural; production methods) on consumer willingness-to-pay. The consumer research from both phases of this project has shown that consumers have limited knowledge about bison and almost any type of information would be beneficial in increasing awareness of bison products. Increasing awareness of bison being ranch-raised all over North America and promoting the fact that bison are not an endangered species should be a priority of the bison industry. People may then be persuaded to taste bison by using information such as the information treatments used in phase 2. The specific information to be used would be determined by the target audience.

Bison is considered to be quite similar to beef in taste and appearance. It is anticipated that these are important attributes in the decision to purchase and consume a meat product and will therefore have a significant influence on the marketing of bison meat products. However, when the specific attributes of price, healthiness and the eating occasion/location are evaluated by consumers, their perceptions about the similarity of meat products change. This offers the industry the opportunity to target marketing towards those consumer segments expected to value the attributes that distinguish bison from other meat products. The results of the experimental auction in phase 1 suggest that there are specific groups of individuals who value bison for its lower fat content and natural production methods as well as the novel eating experience it offers. The competitiveness analysis suggests that products may be perceived as similar by consumers based on cut. This is an important consideration when choosing products to develop and market to specific consumer segments. It is important to have ensure the image being promoted is consistent with the consumers expectations or perceptions for that product. Future product development, marketing and the target market chosen will influence the appropriate pricing strategy for specific bison products.

BISON MARKETING: UNDERSTANDING THE CONSUMER[2]

1. INTRODUCTION

Project Outline

The Bison Marketing Project is a major consumer research initiative involving the Saskatchewan Bison Association (SBA), the Specialized Livestock Marketing Research Group (SLMRG) (Department of Agricultural Economics, University of Saskatchewan), the Specialty Livestock Value-Added Program (SLVAP) (University of Saskatchewan), and the Saskatchewan Food Industry Development Centre, Saskatoon[3]. The project consisted of four phases: two sets of consumer panels (phases 1 &2), a retail trial (phase 3) and recommendations for the development of an industry marketing strategy (phase 4). This report summarises the activities undertaken in phases 1 and 2 by the Specialized Livestock Marketing Research Group as an input into the development of an industry marketing strategy (phase 4)[4].

Four further processed bison products were developed by the SLVAP for the phase 1 consumer panels that ran in five Canadian cities. Information from the first phase of consumer panels provided input into product development decisions and choice of location for the phase 2 consumer panels. Based on SBA objectives and on information from phase 1, it was determined that the phase 2 consumer panels would run in Ontario and Québec as a precursor to the phase 3 retail trials. Two other further processed bison products were developed for the study by the SLVAP, a bison garlic sausage and three flavours of seasoned bison strips. Both products were manufactured at the Saskatchewan Food Industry Development Centre in Saskatoon. These products are being used by the SBA in its phase 3 retail trials.

This report provides an in-depth analysis of consumer attitudes toward bison based on information from phases 1 and 2. It offers insights into the development of marketing strategies for the bison industry over the longer term. The remainder of this section explains how the consumer panels were conducted in each phase. Section 2 discusses consumer expectations and identifies specific consumer segments in the market for bison. Section 3 explores consumer perceptions of bison and compares the competitive positioning of bison vis-à-vis other meats. Section 4 presents results from the bidding experiments evaluating consumers willingness-to-pay for bison given different information. Section 5 provides information on different potential market segments, including differences in willingness-to-pay among and regional differences. Finally, section 6 draws some conclusions with respect to the development of long-term marketing strategies.

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[2] In completing this research, we gratefully acknowledge the assistance of Ann Cooney, Morteza Haghiri and Peter Moroz of the Department of Agricultural Economics, University of Saskatchewan, Phyllis Shand, Jag Dhanda and Paul Rogers of the Speciality Livestock Value-Added Program at the University of Saskatchewan and Gale West at the University of Laval.

[3] Funding for this initiative was provided by the Canada-Saskatchewan Agri-Food Innovation Fund.

[4] Two previous reports to the Saskatchewan Bison Association summarized the initial consumer panel results from phases 1 and 2, see Hobbs and Sanderson (2002) and Hobbs and Cunningham (2003).

Consumer Panels: Phase 1

The consumer research initiative in phase 1 had four key objectives:

(1) to assess consumer preferences for four value-added bison products;
(2) to determine consumers' willingness-to-pay for these bison products and the relative price competitiveness of bison;
(3) to explore avenues for further value-added product development in bison, and;
(4) to identify consumer segments with specific preferences and attitudes toward bison.

Phase 1 of the study was conducted at 5 locations across Canada: Saskatoon (Saskatchewan), Leduc/Edmonton (Alberta), Vancouver (BC), Guelph (Ontario) and Québec City (Québec). These five sites were chosen to obtain a cross-Canada consumer representation in locations identified as being potential target markets. The consumer research at these 5 locations consisted of three parts:

(1) tasting and evaluation of four bison products;
(2) completion of a written survey;
(3) a laboratory market/experimental auction.

A total of 459 people participated in the phase 1 consumer panels.

The four bison products developed by the Specialty Livestock Value-Added Program at the University of Saskatchewan for the consumer panels were: a burger, kabob, stew and deli roast. The burgers and kabobs were cooked on-site at each consumer panel location on small portable grills purchased for the project. The order of presentation of the products was rotated throughout each of the locations. All respondents completed tasting of a product before the next product was introduced. At each location several panels were conducted, each lasting approximately two hours. Staff from the Specialized Livestock Marketing Group were present at all locations. Procedures at each location are summarised briefly below.

Saskatchewan

The first panel was conducted at the University of Saskatchewan in Saskatoon in March 2002. The Specialized Livestock Marketing Research Group (SLMRG) ran the panels, with the assistance of staff from the SLVAP. On campus sensory and kitchen facilities were used. The sensory lab has 8 sensory booths, which are served from an adjoining kitchen. Respondents participated in groups of between 13 and 16, with half of each group completing the written survey while the other respondents participated in the taste testing, then the other half completed the taste panel, etc. When all participants had completed both the written and survey and taste testing, the whole group was brought together for the laboratory market in a nearby conference room. Sessions lasted about two hours. Respondents were paid $30 to attend and an additional $10 for the laboratory market. The $10 bidding experiment payment was used at all sites to ensure that the endowment was consistent.

A total of 89 respondents participated in the Saskatoon panels. Respondents were recruited from several specific socio-economic groups on campus, plus two groups of general public participants (approximately 30 people). The campus groups consisted of students, faculty, professional administrative staff and non-professional (e.g. maintenance) staff – the objective being to obtain a wide spread of education and income levels. Many of the general public participants were recruited through a City of Saskatoon web-based employee bulletin board, others from the regional health authority.

The Saskatchewan sample was fairly similar to the whole sample in terms of gender, number in household and income, although the proportion of people in the below $30,000 income group was higher in Saskatchewan than in the sample on average (31% versus 19%). The Saskatchewan sample had a slightly higher representation of respondents age 18 - 25 (18% vs. 13%) and lower for age 46 –55 (19% vs. 25%) relative to the entire sample. The Saskatchewan panelists tended to have higher education levels than the full sample, with fewer people in the grade 9-13 education level (13% vs. 26%). They also had more experience with bison, with only 27% having never tried bison before, versus 49% for the full sample, while 19% of those in Saskatchewan had consumed bison more than 5 times in the past, compared with 8% in the full sample. A similar proportion of Saskatchewan respondents had reduced their consumption of fat and cholesterol for health related reasons (30% vs. 39%).

Alberta

The Food Processing and Development Centre (FPDC) at Leduc (near Edmonton) ran the Alberta panels in April 2002. Two staff from SLMRG were present throughout. FPDC is a provincial government funded facility specializing in food product development that maintains a consumer database for the purposes of product testing. This facility has 10 sensory booths, with space to accommodate up to two more people, so groups were usually kept to 10 people. Participants completed the tasting in the sensory lab and were then moved to a conference room for the survey and laboratory market session. Unfortunately, at Leduc it was discovered that the stew prepared for the Alberta experiments was not consistent with the earlier stew used in Saskatoon due to problems experienced in scaling-up production. This problem was subsequently rectified for all other locations, however, it may have affected the evaluation of the stew at Alberta. Adjustments to the cooking times for the kabobs were needed to account for differences in the size of the meat chunks. Respondents were recruited from the FPDC database, which included people from Leduc and Edmonton. Respondents were paid $60, the Centre's standard fee for participation, plus the $10 laboratory market payment. A total of 94 respondents participated in the Alberta panels.

Compared to the full sample, the Alberta sample had a slightly higher proportion of women (62% versus 55%), a higher proportion of two-person households (42% vs. 31%) and a lower proportion of four person households (18% vs. 25%). The distribution of income levels and education levels in Alberta were comparable to that of the full sample. The respondents tended to be slightly older at this location relative to the whole sample with 55% of respondents over 45 years of age compared with 42% of the entire sample population. A similar proportion of the sample had reduced their consumption of fat or cholesterol for health related reasons (44% versus 39%), while they were more likely to have tried bison before (29% of those in Alberta had never tried bison before, versus 49% of the full sample).

British Columbia

The BC trials were conducted in Burnaby, Vancouver in April 2002 with the assistance of Creative Consumer Contact Ltd. Two staff from SLMRG were present. The facilities were such that respondents sat together at tables with four or five other individuals in a large room for the entire session. Staff from Creative Consumer Contact monitored all sessions, along with staff from the SLMRG, and respondents were encouraged not to share opinions. Respondents were chosen from the company's database, using pre-approved screening questions and came from Burnaby and across Vancouver. Respondents were paid $40 for participation and the $10 laboratory market payment. A total of 98 people participated in the BC panels.

A higher proportion of BC respondents were women (65% versus 55%), while income levels were fairly similar to the spread across the full sample. Respondents in BC tended to have lower education levels on average, with 41% having grade 9-13 education and 28% having a university degree, compared with 26% and 41% respectively in the full sample. The age distribution of BC respondents was very close to that of the entire sample. Household size, along with the number of people altering their meat consumption due to health reasons were similar to the full sample. BC contained the highest proportion of respondents who had not previously tried bison (69% versus 49% in the full sample).

Ontario

The Ontario panels were conducted in Guelph with the assistance of Compusense Ltd. in April 2002. Two staff members from SLMRG were present for the panels. The facility has 8 sensory booths connected to a kitchen, plus an adjoining room where additional respondents participated at separate tables. Groups of 14-16 people participated. Compusense operates a full computerised sensory evaluation system, which enabled panelists to enter their responses using a computer (the evaluation questions were the same as the other 4 locations). After completing the taste test and computerised survey forms, respondents moved to a separate conference room for the laboratory market. Panelists were recruited from the company's consumer database, using a pre-approved screener. They were paid $50 for their participation (Compusense panelist payment rate) plus the $10 laboratory market payment. A total of 92 people participated in the Ontario panels.

The Ontario sample was split evenly between men and women. Relative tò the full sample, Ontario had a slightly higher proportion of people with grade 9-13 education (33% vs. 26%) and fewer people with a university degree (32% vs. 41%). Income levels tended to be higher, on average, in the Ontario sample, for example, 26% had incomes in the $90-$120K range, compared with 15% in the full sample. With respect to age, the Ontario sample had more respondents age 26-35 years (26% vs. 19%) and fewer respondents age 18-25years (8% vs. 13%) relative to the entire sample. The Ontario sample had a higher proportion of four-person households (41% vs. 25%) and a lower proportion of 1 and 2 person households (31% vs. 43%) compared to the full sample. The tendency to have reduced fat and cholesterol consumption was similar in Ontario (43% vs.39%). A relatively high proportion of Ontario respondents had not tried bison before (67% vs. 49% for the full sample).

Québec

The Québec panels were conducted in May 2002 at the University of Laval in Québec City, with the assistance of staff from the University of Laval Department of Agricultural Economics and Consumer Studies and the Department of Food Science and Nutrition. Two staff members from SLMRG were also present. The on-campus sensory facilities consisted of a sensory room with 17 separate booths, served from an adjacent kitchen. Groups of 12-14 participated in the research and were drawn from a cross-section of socio-economic groups across campus, as with the Saskatchewan experiments. Payment rates were the same as used at the University of Saskatchewan, a $30 'recruitment' fee plus a subsequent $10 laboratory market payment. A total of 86 people participated in Québec.

Québec was the only location in which the number of male respondents (56%) exceeded the number of female. Education levels tended to be higher in the Québec sample, with 56% of respondents having at least a university degree, versus 41% for the full sample. The distribution of income levels, however, was markedly similar to that of the full sample, as was the distribution of household size. The Québec sample had a higher percentage of respondents age 46 to 55 compared to the entire sample (34% vs. 25%) and fewer in the 26 to 35 age group relative to the whole sample (12% vs. 19%). None of the Québec respondents were over the age of 65. A slightly lower proportion of them had reduced fat or cholesterol consumption for health related reasons, although the difference with the full sample is small (36% vs. 39%). Prior experience with bison was similar to the sample average, with 52% of Québec respondents never having tried bison before, versus 49% of the full sample, while 10% had tried bison more than 3 times, compared with 19% in the full sample.

Consumer Panels: Phase 2

Phase 2 of the project had three objectives:

(1) to develop a new value-added product (subsequently amended to two products)
(2) to assess consumer preferences for these products
(3) to assess consumers' willingness-to-pay and implications for competitive pricing strategies.

In consultation with the SBA and Specialized Livestock Marketing Research Group, the SLVAP developed two additional products for this phase: a bison garlic sausage and three flavours of seasoned bison strips (roasted garlic, mesquite BBQ and ginger teriyaki). Consumer panels were run in Ontario and Québec. A total of 120 people participated in the phase 2 consumer panels.

Ontario

Consumer panels in Ontario were run in December 2002 by the same consumer research company used in phase 1, with two SLMRG staff present. Seventy-seven took part in groups of approximately 10. Participants completed the sensory evaluation of the bison garlic sausage, followed by the three bison strip products, as well as evaluating the packaging for each products. Demographic and stated willingness-to-pay data were collected. Following the sensory evaluation, participants moved to a nearby conference room to take part in an experimental auction designed to measure the effect of nutritional information, health information and a taste testimonial on willingness-to-pay. Fifty-seven of the Ontario panelists (6 groups) took part in the experimental auction. Respondents who participated in the sensory evaluation and the experimental auction were paid were paid $40 for their participation, those who just completed the sensory evaluation (20) were paid $20.

The phase 2 Ontario sample had a majority of women participants (61%), a majority were in the 30 to 49 age range (65%) and were well educated with most obtaining additional education since high school (69%). Annual gross household incomes were also relatively high, with over sixty percent earning over $60,000 per year. Participants had limited experience and knowledge of bison. Sixty-three percent had never tried bison before, similar to the phase 1 Ontario sample population, 70% did not know or agreed that bison were endangered, 78% were not familiar with bison nutritional characteristics and 95% were not familiar with bison production practices.

Québec

The Québec panels were run by Cintech, a private consumer research company at St. Hyacinth, near Montreal. Forty-three people participated in these panels. All survey material was translated into French. Respondents completed the same sensory evaluation and package evaluation of the four bison products. The Québec panelists did not participate in the experimental auction in phase 2. Respondents were paid $25 for their participation.

Seventy-four percent of the Quebec panel were women participants, participants were older with 65% over 50 years of age, 56% had a high school diploma or less for education, 56% had a household size of two people and annual gross household incomes were relatively low, as 58% earned less than $39,000 per year. Experience and knowledge of bison was similar with the Ontario phase 2 participants – 71% had never tried bison before, 75% agreed or did not know if bison were endangered, 74% were not familiar with bison nutritional characteristics and 84% were not familiar with bison production practices.

A detailed analysis of the sensory evaluations of the four products used in phase 1 and the two products used in phase 2 was provided in the first and second reports in this series, Hobbs and Sanderson (2002) and Hobbs and Cunningham (2003) respectively. Readers are referred to these reports for a detailed breakdown of sensory evaluation results by province and for information on the demographic composition of the consumer samples. This report focuses instead on the marketing strategy implications from both phases. The next section discusses how consumers form expectations about products and suggests how this information could be used to develop marketing strategies targeted to specific groups of bison consumers.

2. CONSUMER EXPECTATIONS

Little research exists to identify the characteristics that consumers value in bison and to distinguish consumer segments with different preferences. An understanding of the consumer's definition of quality and which attributes influence the purchase and consumption decision is necessary for product development and marketing strategies.

Signalling Quality to the Consumer

Consumers gather, interpret and act upon information available to them. However, information is not costless and credibility needs to be established for the information. Establishing credibility for some information attributes is easier than for others. Product attributes fall into three information categories: search, experience and credence attributes.

Credibility for *search attributes* is established immediately, as these are the attributes consumers use in identifying a product before purchasing. This may include product colour and packaging. Attributes consumers identify while consuming the product are called *experience attributes*. Experience attributes may include taste, tenderness and product convenience. Credibility for experience attributes will be established during consumption so firms must ensure that claims are accurate, or risk losing customers. *Credence attributes* are unidentifiable before, during and after purchasing and consuming the product. Credence attributes may include nutritional or hormone-free claims. Claims related to credence attributes generally need to be made by a reputable firm or have reputable third party assurances to be considered credible by consumers. All three of these attributes signify quality to the consumer.

Caswell *et al.* (2002) developed a unified quality framework utilising the three intrinsic quality attributes identified above. A slightly modified Food Quality Framework is presented in Figure 2.1.

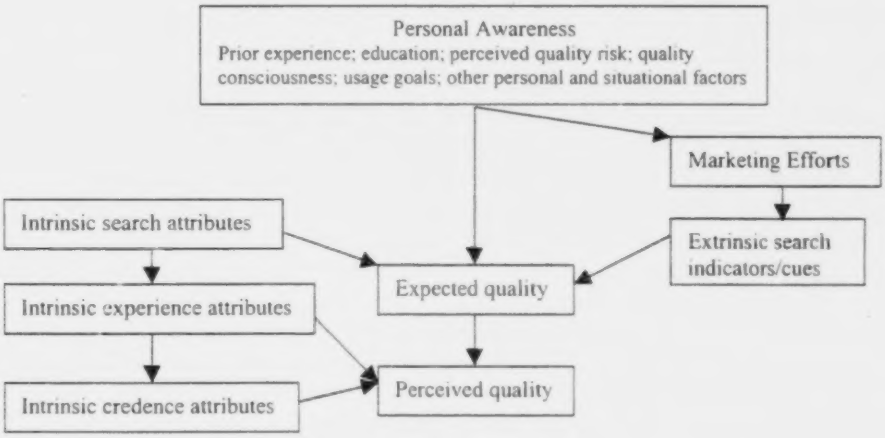
Personal Awareness
Prior experience; education; perceived quality risk; quality consciousness; usage goals; other personal and situational factors
Marketing Efforts
Intrinsic search attributes
Extrinsic search indicators/cues
Expected quality
Intrinsic experience attributes
Perceived quality
Intrinsic credence attributes

Figure 2.1 – **Food Quality Framework (adapted from Caswell *et al.* 2002, p.55)**

This model represents the quality perception process for consumers. It is assumed that every product has an array of intrinsic quality attributes, search, experience and credence, which exist in a buyer's information environment. However, each buyer may classify the information as a different intrinsic quality attribute depending on the benefit and cost the buyer faces in gathering the information and using it in a purchase decision. In addition to the intrinsic quality attributes, products have *extrinsic indicators/cues* to facilitate purchase decisions. Intrinsic search attributes and extrinsic indicators/cues can influence quality expectations. Extrinsic indicators/cues also influence expected quality and are especially important for credence attributes. By using a credible system (i.e. third-party verification) to verify information provided to consumers, intrinsic credence attributes can be used as a marketing tool in the form of extrinsic indicators/cues. Possible intrinsic attributes and extrinsic quality indicators/cues for a processed bison product are listed in Figure 2.2.

Intrinsic Quality Attributes

1. **Food Safety Attributes**
   - Food borne pathogens
   - Hormone residues
   - Antibiotic residues
   - Food additives
   - Spoilage
   - Physical hazards
2. **Nutrition Attributes**
   - Calories/Fat/Cholesterol
   - Sodium
   - Carbohydrates
   - Protein
   - Vitamins & Minerals
3. **Sensory Attributes**
   - Taste
   - Colour
   - Appearance
   - Freshness
   - Smell/aroma
4. **Value/Function Attributes**
   - Size & Style
   - Composition
   - Convenience of preparation
   - Package materials
   - Shelf-life
5. **Process Attributes**
   - Animal welfare
   - Traceability
   - Environmental impact
   - Place of Origin
   - Native/heritage product

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Extrinsic Quality Indicators/Cues

1. **Test/Measurement Indicators**
   - Quality management systems
   - Certification
   - Records
   - Labelling
   - Minimum quality standards
   - Licensing
2. **Cues**
   - Price
   - Brand name
   - Manufacturer name
   - Store name
   - Packaging
   - Advertising
   - Country of Origin
   - Warranty
   - Reputation
   - Past experience
   - 3rd Party Endorsements
   - Other information provided

Figure 2.2. – **Intrinsic/Extrinsic Attributes (adapted from Caswell *et al.* 2002, p.57)**

These lists are not divided into search, experience and credence attributes for several reasons. Different attributes fall into different categories for different buyers depending upon the cost to them of gathering, interpreting and/or analysing information about product quality. Technology may also change the classification of different attributes, as can information provided by marketers if it reduces transaction costs for consumers and is credible. Converting these intrinsic credence and experience attributes into credible extrinsic indicators/cues reduces transaction costs for consumers, which may increase demand.

Consumers incur information costs before an actual transaction takes place. Information costs include searching for the desired product, obtaining information about the product and price discovery. Transaction costs can be reduced for consumers by providing information that influences preferences for the product, as long as that information is credible. Improving information about important product attributes reduces transaction costs for consumers and may entice more product purchases and/or higher prices. Therefore, information should be targeted at decreasing consumers' information/search costs. It is useful to understand what attributes consumers deem important with respect to meat products.

In phase 1 of this study, information was gathered on the importance consumers' place on specific attributes when purchasing and consuming meat products. Respondents were asked to indicate to what extent they agreed or disagreed with a series of statements about the influence of specific factors on their purchasing decisions on a 5-point scale ranging from strongly agree (1) to strongly disagree (5).

Nutritional Information

Respondents were presented with a statement that nutritional content was important to them when purchasing a meat product and asked to agree or disagree. The results of the survey suggest that nutritional content is relatively important when purchasing a meat product, with almost 70 % of respondents either agreeing or strongly agreeing with this statement. Given the anticipated nutritional advantages of bison relative to other meats these results suggest a potential advantage for the bison industry in promoting nutritional attributes if these benefits can be demonstrated scientifically and communicated credibly to consumers.

Previous literature on the subject of nutrition format and credibility can be examined to determine the best way to present nutritional information. Research has demonstrated that nutrition information sells products, and that displaying this information in the most useful format for purchase decisions is important for product sales. Things such as attractiveness, ease of use and clear presentation of nutrition information are important factors. Many consumers are concerned with negative nutrients and strive to avoid or reduce consumption of various attributes, including calories, cholesterol, sodium, sugar and various chemical additives (i.e. monosodium glutamate and sodium nitrate). Negative nutrients may be more compelling to cause a change in purchase patterns since consumers attempt to avoid them. The format features that have the greatest impacts are those that reduce the effort of processing information as this will reduce the transaction cost to the consumer. The nutrition label is an important educational tool for conveying information that consumers can use to make informed food choices that promote optimal health but the information must come from a credible source. Research has shown that product endorsements from impartial third parties have a high degree of credibility when they exhibit both "expertness" and "trustworthiness". Examples of impartial third parties are government organisations such as the Canadian Food Inspection Agency (CFIA) and the United States Department of Agriculture (USDA).

Respondents were asked to agree or disagree with the statement that fat and cholesterol content are important when purchasing a meat product. The majority of respondents supported this statement with 78% agreeing or strongly agreeing with it. Given the claims regarding lower fat and cholesterol content of bison relative to other meats, this is a positive finding for the industry and should be considered when marketing bison products. As with nutritional content, reliable scientific evidence to support this claim and a credible communication strategy with consumers will be important.

Availability and Convenience

The effect of product availability at a grocery store on the likelihood to purchase for home consumption was assessed. Respondents were asked to agree or disagree with the statement that when buying a meat product to cook at home they are more likely to buy it if it is available where they regularly buy groceries. As expected, availability is an important determinant of the likelihood to purchase a meat product, with almost 90% of respondents agreeing or strongly agreeing with this statement. The importance of convenience to purchase a meat product is reflected in respondent answers to other purchase behaviour questions in the survey. When asked where they were most likely to purchase a specialty meat product the answer most frequently given (57%) was the grocery store. This has important implications for the distribution of new bison meat products and should be considered in any marketing strategies adopted by the industry.

With the rising popularity of convenience foods and products that offer reduced cooking times, it is pertinent to know the importance that consumers place on preparation time when cooking a meat product at home. When asked how often they ate a main meal of the day that was "quick" (defined as taking less than 20-25 minutes to prepare and cook) approximately 60% responded 3 times or more a week. The average answer was 3.51 times a week. Respondents were also asked to agree or disagree with the statement that when buying a meat product to cook at home, it is important that it is quick and easy to prepare. The results suggest that this is important to some consumers with 45% of respondents agreeing or strongly agreeing with the statement but a large number (34%) neither agreed nor disagreed with this statement. Interpreting this rating is difficult but one possible explanation is that the importance of being quick and convenient depends on the situation and on the consumer segment being targeted.

Brand Name

When developing a marketing strategy it is useful to know the importance consumers' place on a brand name. Survey respondents were asked to agree or disagree with the statement that brand name is important when purchasing a meat product to cook at home. This is not particularly important to consumers with only 22% agreeing or strongly agreeing with this statement. A large number (35%) neither agreed nor disagreed while 31% disagreed.

Price as a Quality Signal

One way to gauge consumer price sensitivity is to gather information on the extent to which consumers compare prices when purchasing a product. Given that bison tends to be sold at a higher price relative to beef, respondents were asked to agree or disagree with the statement that when purchasing a meat product to cook at home they compare prices. An estimated 81% of respondents either agreed or strongly agreed with this statement. Consumers consider themselves to be relatively price conscious when it comes to purchasing meat products. This underscores the importance of evaluating the likely price competitiveness of a new bison product prior to launch.

Novelty

It has been suggested that bison could be promoted as a unique or unusual eating experience. Therefore, we asked respondents to agree or disagree with the statement that when purchasing a meat product to cook at home they look for products that will be a novel (unusual or unique) eating experience. We asked the same question with respect to meat eaten in a restaurant. Asking this question was one way to assess whether the image of being "exotic", "unique" or "special occasion" is important to consumers when purchasing meat to cook at home. For home consumption, there was no clear consensus on this point with 27% agreeing, 34% neither agreeing nor disagreeing, and 27% disagreeing with this statement. Again it is difficult to interpret these "middle of the road" responses but it may depend on the situation. For example, it may be that when making a meal for the family during the week it is not important, whereas it is when having guests over for supper on Sunday. Compared with home consumption, there seemed to be more agreement with this statement when asked to consider a restaurant scenario, with almost 60% of respondents either agreeing or strongly agreeing. Further research would be required before any firm conclusions could be drawn about these results, but they suggest a mixed response to a marketing campaign based on bison as a novel eating experience for the home consumption market. This strategy appears to be more suited to products targeted at the food service (restaurant) market.

Another marketing strategy that has been used by the bison industry is promoting the image of bison as a heritage meat, traditional or native to North America. There has been interest in assessing the appeal of this image to the consumer. Respondents were asked to agree or disagree with the statement that a specialty meat product that is native to North America (a traditional or heritage food) is appealing. The results suggest that there is some support for this statement with over half (53%) of respondents agreeing or strongly agreeing. Just over one-third (36%) respondents neither agreed nor disagreed with the statement, which either indicates indifference or perhaps a lack of understanding the term "native to North America" with respect to a meat product.

'Natural' Production Methods

The "natural" production methods used to grow bison relative to cattle (e.g. in most cases, absence of administered growth hormones) have been cited as a potential competitive advantage. To assess the importance of this for consumers, respondents were asked to agree or disagree with the statement that production methods used to produce the meat product (e.g. organic, natural production methods, humane treatment of animals) are important when they buy a meat product.

More than half (56%) of respondents agreed or strongly agreed with this statement, while almost 30% of respondents neither agreed nor disagreed with the statement. With over half of the respondents supporting this statement and another 30% giving an indecisive response this may be signalling a growing issue for the Canadian meat industry in the near future. Although further research on this issue would be needed before firm conclusions can be drawn, these results suggest that industry support and promotion of "natural" production methods could be a viable marketing strategy.

Market Segmentation

In an emerging specialty meat industry it is essential to understand the targeted consumer so that promotion and supply chain development can be focused to foster both market discovery and growth in the most profitable potential markets. Identifying factors that are important to specific market segments and then assessing how bison products might be developed and marketed to meet the specific preferences of the targeted groups is a first step in developing an effective marketing strategy.

To better understand what consumers look for when purchasing and consuming a meat product, respondents in phase 1 were asked to rate the importance of price and a number of health, convenience and image attributes. These attributes are listed in Table 1. A cluster analysis based on the attribute ratings reveals groups of respondents with quite distinct attitudes. Cluster analysis refers to a group of techniques used to identify similar objects based on their characteristics (Hair et al., 1992). Objects are identified and classified by the process such that each object is similar to other objects in the same cluster according to predetermined selection criterion (Hair et al., 1992). The member objects of a cluster will be more similar or homogeneous to other objects within the cluster and more dissimilar or heterogeneous with objects in other clusters (Hair et al., 1992).

Each respondent's attribute importance ratings were used as the selection criterion variables. Cluster analysis allows for the segmentation of the entire sample into groups of respondents with attribute ratings distinct from the entire sample but similar within the group based on the criteria used to establish the clusters. These similarities in terms of attribute ratings can then be used as the basis for identifying other similarities within the group that may help explain cluster membership. For example if a cluster or group of respondents rates one particular attribute significantly higher than members of other clusters it is then possible to look for other commonalties between group members such as gender, age or education that helps explain this similarity rating. If these commonalties exist, such that a profile of the cluster can be established (e.g. membership is primarily composed of single females between the age of 30 and 45 with a college education), it may be possible to identify market segments that are looking for this attribute and market products specifically targeted at this segment.

Cluster analysis was performed for three to five clusters. Interestingly, when four or five clusters are used membership in cluster 1 and 2 does not change but cluster 3 is divided into subgroups. A summary of each of these clusters is provided below. These clusters represent potential market segments to which future bison marketing strategies can be directed.

Cluster 1: Convenience

Cluster 1 included 165 or 36% of the 457 respondents in phase 1. The demographics of this group in terms of gender, income, education, age and number in the household were similar to that of the entire sample population. The only exception was a slightly lower number of respondents (11%) in the 51 to 60 age category relative to the entire sample population (17%).

Convenience to purchase (available where I regularly buy groceries) and convenience to prepare were statistically more important to this group relative to the rest of the sample. Nutritional content, a novel or unique experience at home or in a restaurant and the appeal of a meat product native to North America were all statistically significantly lower for this group than for the remainder of the sample. Production methods were also considered much less important to this group relative to the whole sample. The importance of price comparison, fat and cholesterol content and brand name were similar to the average for the entire group. Convenience to purchase and price comparison received the highest ratings by this group. All locations, with the exception of Quebec at only 14%, were evenly represented in this cluster.

This cluster represents approximately one third of the sample population. Based on the average importance ratings given to the attributes evaluated by this cluster it is anticipated that this group of respondents would be interested in meat products that are convenient. Respondents in this group would be price conscious, while placing less importance on brand name and purchasing special or novel meat products for home or restaurant consumption. A marketing strategy based on the "uniqueness" of the meat product is likely to have little impact on this group that finds these attributes of little importance in the purchase and consumption of meat products. However value added products that offer convenience to purchase and prepare might be marketed to this group if they can be provided at a price that consumers consider to be a comparable with other meats. For this group of consumers value-added bison products that are available at the local grocery store and are quick and easy to prepare are likely to be more appealing. Pre-cut and marinated bison products or stew/chilli are likely to be more acceptable to these consumers than whole roasts that require considerable preparation and cooking time.

Cluster 2: Eating Experience

There were 61 or 13 percent of respondents from phase 1 in cluster 2; thus it is a relatively small cluster. Relative to the entire sample population this cluster had similar demographics for gender and number in the household. In general, this cluster tended to be a younger, more highly educated group, with middle incomes. In terms of age distribution this group had a higher number of respondents 30 years and under (41%) relative to the entire sample (21%), with a lower percentage of respondents in the 31 to 40 (17%) and 41 to 50 (19%) age categories relative to the entire sample (24% and 29% respectively). An estimated 10% percent of respondents in this cluster reported income below $30,000 compared with 19% for the entire sample. Approximately 35% of respondents in this group indicated income below $90,000 compared with 25% of the entire sample population. This group had a higher education level than the entire sample with 58% having a university degree compared with 41% respectively. In cluster two 17% of respondents had grade 9 to 13 as a highest level of education compared with 26% for the whole sample.

In this cluster Quebec is heavily represented relative to the other four locations at 35% of the cluster membership. Respondents in BC are the next largest group at 22% with Alberta, Ontario and Saskatchewan having similar representation at 15%, 15% and 13% respectively.

Respondents in cluster 2 rated the importance of looking for a unique/novel meat product when purchasing for home and restaurant consumption statistically higher than the entire sample at the 99% confidence level. The appeal of a meat product that is native (natural) to North America was given the highest rating by this cluster relative to the other groups and was significantly higher than the entire sample at the 95% confidence level. This group gave brand name, fat and cholesterol content, nutritional content and production methods ratings lower than that of the entire group. These ratings are statistically significant at the 99% confidence level. Price comparison also received a lower importance rating compared to the entire sample (95% confidence level). Convenience to prepare and convenience to purchase received similar ratings to the entire sample. The highest average attribute ratings by this group were for convenience to purchase, a unique/novel product for restaurant consumption, the appeal of a specialty meat native to North America and price comparison. So although the average rating by this group for price comparison was statistically lower than the average rating by the entire sample, this attribute still received one of the highest ratings *within* the group.

For the "eating experience" cluster, the uniqueness of bison, particularly its heritage image will likely appeal, but these consumers are less likely to be swayed by emphasis on health attributes and hormone free production than is the case for other consumers. In addition, they may be relatively price sensitive. The easy availability of bison at retail locations will be important for these consumers, who may not go out of their way to seek out bison.

Cluster 3: Health Conscious Eating Experience

As a whole, this cluster is very large with 231 or approximately 50 percent of the entire sample population from phase 1. This group places more importance on fat and cholesterol content, nutritional content and production methods than the other cluster groups. Ratings for all three of these attributes are significantly higher than the entire group at the 99% confidence level. When cluster analysis is expanded to 5 groups, membership in cluster 1 and 2 remains unchanged but cluster 3 is divided into three subgroups. These three subgroups have interesting differences in terms of the importance of the 10 purchase decision attributes.

Cluster 3a: Healthy & Novel – But not at any Price

Cluster 3a is composed of 77 respondents representing approximately 17% of the sample population. The demographics of this group based on gender, income, education, age and number in the household were representative of the entire sample population. Alberta, Saskatchewan and BC have the highest representation in cluster 3a at 27%, 26% and 23% respectively. Ontario makes up 18% of the members and Quebec is under-represented at 5%.

In addition to health attributes (nutritional content, fat and cholesterol content), also important to this group were price comparison, on-farm production methods, native to North America, and novel/unique product for restaurant and home consumption. Importance ratings for these attributes were significantly higher than the entire sample at the 99% confidence level. The highest average importance ratings by this group were for convenience to purchase, fat and cholesterol content, price comparison and nutritional content. It is interesting to note that these same attributes also received the highest attribute ratings by the entire sample. Essentially this group seemed to want it all, rating all attributes on average higher than the entire sample. The exceptions were quick to prepare and brand name that received lower average ratings than the entire group. Although convenience to purchase was given the highest average importance rating by this group, this rating was not statistically different from that of the entire sample.

It is expected that healthy, yet novel, products may be appealing to this group of consumers if they can be offered at competitive prices. The lower average rating on convenience to prepare suggests that these individuals may be willing to spend more time in preparation. It may be possible to market bison products that offer an alternative taste experience but require more preparation time to this group of consumers. Products that emphasize the distinct flavour of bison in lean products such as whole roasts or steaks may appeal to these individuals, provided that they are reasonably priced. Unlike cluster 1, this group may be less inclined to purchase processed products such as stew or chilli that sacrifice the distinct flavour and leanness of bison for convenience. Use of a brand name to market bison products is likely to be less successful with this group. Since development and promotion of a brand name is relatively expensive it is important to consider the anticipated impact of such a marketing strategy on consumers.

Cluster 3b: Healthy with Time to Spare

Cluster 3b was the smallest of the five clusters containing 24 respondents or 5% of the sample population from phase 1. The demographics of this group were different from the entire sample but given its small size it would be difficult to draw any conclusions about whether these difference were indications of a specific market segment. An estimated 41% (10) of respondents in this group came from 2-person households and 41% were between the age of 31 and 40 compared to the entire sample with 31% and 24% respectively. Education was lower with 38% having grade 9 to 13 compared with 26% of the sample population and those with a university degree represented only 20% (5) of the cluster while 41% of the whole sample had this level of education.

BC is well represented in this small group, making up 33% of cluster 3b membership, followed by Quebec at 25%, Ontario at 21% and Saskatchewan at 17%. Alberta had only one respondent (4%) in this particular cluster. This group is distinguished by the ratings for both convenience to purchase and convenience to prepare. Both of the attributes received importance ratings significantly lower than that of the whole sample. The rating for convenience to purchase was significantly lower at the 99% level while convenience to prepare was significantly lower at the 95% confidence level. For all other attributes, the rating by this group was not significantly different from that of the entire sample. The highest average attribute ratings by this group were for production methods, nutritional content, fat and cholesterol content and price comparison.

Marketing of safe, environmentally and animal friendly production methods, along with the health benefits of bison as a lean, nutritious meat may have results with this group. They appear to be health and price conscious but not looking for a novel eating experience. The statistically lower ratings for convenience to prepare and purchase suggest they may be willing to spend more time obtaining and cooking meat if it offers them a healthy alternative. Distribution through specialty shops would be possible but prices would need to be comparable to other meat products available. Bison cuts that offer nutrition and lower fat content but require more time to prepare may appeal to this group.

Cluster 3c: Have it All at a Reasonable Price

Cluster 3c included 130 respondents or 29% of the sample population. The demographics of this group based on gender, income, education, age and number in the household were similar to the entire sample. The only exceptions were the 30-and-under age category that was slightly under represented at 14% compared with 21% of the entire sample; thus this was a slightly older group All sites, with the exception of Saskatchewan, appear to be relatively evenly represented in cluster 3c. Saskatchewan is under-represented with only 11% of cluster membership.

Cluster 3c gave significantly higher average ratings, relative to the entire sample, for all purchase attributes evaluated with the exception of convenience to purchase and price comparison. These two attributes were given ratings similar to the entire sample population. This group gave fat and cholesterol content the highest average rating, followed by convenience to purchase, nutritional content and price comparison. Cluster 3c appears to have found all the attributes relatively important with the lowest rating being 2.73 for brand name comparison. Even this lowest rating is statistically higher than the average rating for this attribute by the entire sample.

This group is looking for a reasonably priced healthy eating experience. Respondents in this group may be very discriminating shoppers who carefully consider a large number of factors when purchasing a meat product. The highest importance based on the average ratings was placed on the health attributes, convenience to purchase and price. This group of consumers may value a unique eating experience but will also consider the price and healthiness of a meat product. These respondents probably prefer bison meat products available in the local grocery store that can offer a healthy meat alternative at a reasonable price. The longer cooking time often associated with bison meat is not likely be an issue for this group. Marketing under a brand name may have some advantages with this consumer group given the importance they place on brand name when buying a meat product. Creating brand awareness is a consideration when developing a marketing strategy for bison meat products.

Table 2.1. – Average Attribute Ratings of Cluster Groups*

Attribute	**Entire Sample (467)**	**Cluster 1 (165)**	**Cluster 2 (61)**	**Cluster 3a (77)**	**Cluster 3b (24)**	**Cluster 3c (130)**
More likely to buy when meat product is available where I regularly shop	1.57	1.41	1.46	1.47	3.96	1.45
Fat and Cholesterol content are important when purchasing a meat product	1.93	2.04	3.28	1.64	2.17	1.31
Compare prices of meat products when buying to cook at home	1.96	1.90	2.37	1.7	2.29	1.95
Nutritional Content is important when purchasing a meat product	2.14	2.37	3.37	1.81	2.04	1.5
Production methods are important when buying meat product	2.41	2.84	3.24	2.12	1.74	2.04
When buying meat at a restaurant look for unique/novel products	2.47	3.22	1.85	2.06	2.50	2.07
A specialty meat product native to North America appeals to me	2.47	2.95	2.16	2.22	2.83	2.11
Important meat bought for home preparation be quick and easy to prepare	2.66	2.45	2.70	3.71	3.21	2.19
When buying meat to cook at home look for unique/novel products	3.05	3.68	2.71	2.75	3.42	2.52
Brand Name is important when purchasing a meat product	3.26	3.29	3.76	3.79	2.83	2.73

*Scale: 1 = Strongly Agree, 5 = Strongly Disagree

3. PERCEPTIONS OF BISON

To provide the industry with direction for marketing and product development it is important to understand consumer perceptions about bison meat and the competitive positioning of bison. In other words, where do bison products "fit" relative to other meat products available on the market. An understanding of the consumer's preconceptions and expectations is necessary to develop a marketing strategy that appropriately positions bison products in the marketplace.

Images of Bison

The written survey in phase 1 (see Appendix A) provided an opportunity to gather information on consumers' attitudes toward bison in general. Respondents were asked to indicate whether their overall image of the bison industry was positive, negative or neutral (neither positive nor negative). The results suggest that respondents have a very favourable image of the industry, with over 70% indicating their image is positive. In this sense, bison may have an advantage over traditional meats as "the new kid on the block" for whom some consumers have not yet developed strong negative attitudes (for example on issues such as the environment or animal welfare), which may not be the case for traditional meats. As people become more familiar with bison, it will be important for the industry to be proactive in maintaining its positive image.

"Bison" Vs "Buffalo

The industry has been debating whether to use the term "buffalo" or "bison" when referring to its meat products. Respondents were asked if they would be more likely to buy a bison/buffalo meat product if it were labelled bison, buffalo or if it made no difference to them. The survey results show that just over 50% were indifferent while 33% preferred the name bison. Only 15% said they preferred the name buffalo. Notable differences were in Ontario, where 46% preferred the name buffalo and 46% were indifferent. In Québec 61% prefer the name bison and 34% were indifferent, however, this is to be expected given that the French language word for the species is bison.

At the end of the survey process, informal discussions were conducted with most consumer groups. Although these were not formal focus group discussions, they provided an opportunity to discuss additional issues with respondents, including their attitudes towards the terms "buffalo" and "bison" (whereas the written survey question had asked if they would be more likely to *buy* the meat if it were called buffalo or bison). During these discussions, strong support emerged for the name "bison". The "name indifference" on the written survey may be telling us that for those "indifferent" respondents, once they had made a decision to buy the product its name would be irrelevant, but when asked which name they preferred the majority said bison. In the discussions, frequent comments (in all locations) were that bison sounded "more exotic" and that buffalo reminded them too much of the animal. A few people commented that they did not know what bison was before attending the consumer panel and were more familiar with the term buffalo. This suggests the need for consumer education so that people realise what bison is but also that it is probably far more important for the industry to focus on the key attributes of bison rather than on what to call it. It seems clear that for industry organisations currently using the name "bison", the expenditure of significant resources to change the name to "buffalo" does not seem warranted. At any rate, it should only be undertaken after careful consumer research that specifically addresses this question.

Health and Palatability Images

In a developing industry, decisions about product development and marketing strategies require knowledge of consumer perceptions of the product and the industry. To gather information about consumer images of bison, respondents were asked to agree or disagree with six statements about bison. The results indicate both positive images upon which a marketing strategy could build and negative images that it could seek to dispel.

Almost 80% of those surveyed believe that bison meat is a healthy meat. This is a very positive image and one that should be emphasised. There was not clear agreement on whether bison meat is perceived as a special occasion meat, with an even split of about 37% agreeing and disagreeing and the balance neither agreeing nor disagreeing. This probably depends on the cut of meat (i.e. perhaps a bison steak is seen a special occasion meat but a bison burger is not) or it may be that as more bison meat products become available it is moving from a specialty to a mainstream meat.

When asked if they believe bison is a unique, heritage meat, 62% of respondents agreed, 25% neither agreed nor disagreed and 13% disagreed. This suggests that bison is thought of by many consumers as a "heritage" meat, which when combined with the positive response to the earlier question about the appeal of a heritage or native to North America meat, indicates that this may be a useful marketing strategy for some bison products.

About half (51%) of respondents disagreed when asked if bison tastes "gamey" or wild. This leaves about half who either agreed with the statement (22%) or neither agreed nor disagreed (27%). Some of the comments on the taste panel questionnaire and in informal discussions with participants, revealed that a number of people had expected bison to be wild or gamey in taste before trying it, and were pleasantly surprised when it was not. Note that, with the exception of half the Saskatchewan sample, respondents had completed the taste panel before answering these questions. If "gamey" or wild tasting are perceived as negative attributes, a strategy to educate the public about bison meat products would be useful. Again, when asked if bison meat is tough about half (52%) disagreed while 29% neither agreed nor disagreed and 20% agreed with the statement. Clearly, for a meat product toughness is a negative image and future product development should continue to address the tenderness issue. When asked if they believed that bison is a dry meat 46% disagreed, 26% agreed and 27% neither agreed nor disagreed. This is another perception that the industry needs to address through further product development and marketing. When asked if they believe bison is an endangered species 50% disagreed, 34% neither agreed nor disagreed and 15% agreed. Thus, a surprising half of respondents either believe (erroneously) that bison are an endangered species or do not know. If not corrected through consumer education, this misperception could remain an impediment to widespread future sales growth.

Comparison of Bison with Other Meat Products

It is useful to assess how people perceive bison relative to competitor meat products. To help build a picture of the relative competitive positioning of bison respondents in phase 1 were asked to give their opinion on different aspects of 15 meat products including bison burgers, bison kabobs (kebabs) and bison striploin steak. Other products included beef, pork, chicken, lamb, veal and lobster cuts and further processed products. They were asked to compare each product to other meat products on the basis of price, healthiness, whether the product is considered a special occasion meat and whether they would be more likely to eat the product in a restaurant or at home (see survey questions in Appendix A).

Respondents compared each of the 15 products on the basis of their perceptions of the product's price relative to other meats on a scale of 1 to 7, where 1= extremely low in price and 7= extremely high in price. A bison burger was thought to be about the same price as other meat products or slightly higher by 58% of respondents. Bison kabob was thought to be slightly higher in price by 39% of respondents, about the same as other meat products by 24% and somewhat higher in price by 22% of respondents. Over 60% if respondents expected a bison striploin steak would be slightly or somewhat higher in price relative to other meat products. In general it can be concluded that respondents consider bison to be slightly higher in price relative to other meat products and believe this is true more so for the striploin steak than the burger and kabob.

Respondents were asked to rate the "healthiness" of 15 meat products on a scale from 1= very healthy to 7= very unhealthy. A bison burger was rated by 54% of respondents as being slightly to very healthy relative to other meat products, with a further 28% rating it as about the same. A larger percentage of respondents believed that a bison kabob would be slightly to very healthy relative to other meat products (70%) and 26% rated it as about the same. Similar to the kabob, 72% of consumers felt that a bison striploin steak would be slightly to very healthy relative to other meat products and 23% rated it as being about the same. This confirms that, relative to other meat products bison, is considered to be a "healthier" meat and is encouraging when combined with the apparent importance placed on health and fat/cholesterol content in earlier survey questions.

To assess whether consumers consider different meat products (including bison) to be a novel or "special" meal, respondents were asked to indicate whether they regarded the three bison meat products as a regular, every day type meal or a unique, special occasion eating experience with 1= very ordinary or every day and 7= very special meal. A bison burger was rated as slightly to very special by 46% of respondents. A bison kabob and a striploin steak were regarded as slightly to very special meal occasions by 74% and 73% of respondents respectively. These results confirm the earlier supposition that whether consumers consider the meat to be a "special occasion meal" depends to some extent on the cut. These differences may be related to the price or to the occasion at which they would be consumed.

Consumers were asked to indicate *where* they were most likely to consume each meat product on a scale of 1 to 7, with 1= if I eat this product, I would only ever eat it at home to 7= if I eat this product, I would only ever eat it in a restaurant. If we assume eating in a restaurant is more likely to be the venue for a "special meal" then the results support the previous findings that burgers are less of a "special" meal than are kabobs and striploin steak. A total of 41% of respondents gave answers ranging from more likely to eat the bison burger in a restaurant to would only eat it in a restaurant. This number rises for the kabob and striploin with 57% and 53% respectively.

Consumer Experiences with Bison

Almost 50% of respondents had never tried bison before the taste test and a further one-third (32%) had only tried it once or twice. However, the number of times respondents had tried bison varied considerably between the locations, with BC and Ontario both having almost 70% of respondents who had never tried bison while this number drops to close to 50% for Québec and 30% for both Alberta and Saskatchewan. These differences in experience with bison may explain some of the disparity of responses to the four products between locations.

The survey asked people if they had ever purchased bison. Those that had not were asked a follow-up question about the reason(s) why. They could choose from among a list of reasons, including: not usually available where I regularly shop; price; not familiar with how to cook it; have never seen bison meat for sale (do not know where to purchase); believe bison are an endangered species; bison does not appeal to me as a meat; or they were given the opportunity to list a different reason. The most frequently cited reasons for not having purchased bison were that respondents had never seen it for sale (61%), it was not available where they regularly shopped (52%), while approximately 25% indicated that it was because they were not familiar with how to cook it.

Reactions to Bison Products by Location

For the tasting panel in phase 1, all respondents were asked to first taste the sample and then complete a short questionnaire for each product. Respondents were asked to rate the following aspects of each product including overall acceptability, taste or flavour, juiciness and tenderness. In each case, an 8-point scale was used, ranging from 1 "Extremely Acceptable" to 8 "Extremely Unacceptable". Similar sensory analysis questions were used in the phase 2 consumer panels, although the products were different.

Respondents in phase 1 were asked some additional questions during the sensory panel, including where they would be most likely to purchase the product (grocery store, restaurant, fast food restaurant, deli/sandwich shop, concession stand, other location). They were asked to indicate the price they would be willing to pay for the product having been given the price of a similar beef product as a reference point. They were asked to comment on what they liked and did not like (or would change) about the product. After having tasted all four products (burger, kabob, stew and deli meat), panelists were asked to rank them from 1 to 4 in order of preference. Finally, they were asked whether, after having tasted bison during the taste panel, they thought it was better, worse or about what they had expected and were given further opportunity to comment. Details of the sensory testing are provided in the Bison Consumer Research Report – Phase 1 (Hobbs and Sanderson, 2002).

The results of the taste panels from phase 1 varied depending on the bison product being considered and location. Overall Saskatchewan and Alberta were the most receptive to the bison products, while BC was in general the least receptive. The price respondents were willing to pay relative to a similar beef product also varied by the product being offered and by location. . Using the average stated willingness-to-pay, the largest premiums over the comparable beef prices were for the burger and kabob. Alberta and Saskatchewan had the highest stated willingness-to-pay for the burger at 28% and 24% respectively. For the kabob, Québec respondents said they would pay the highest premium at 22%, followed closely by Saskatchewan at 20%. For Ontario the highest stated premium is for the burger at 17%, while for all other products the value is very low or negative. Consistent with the generally negative response of BC to the products, the average premiums on all products are quite low, the highest being the kabob at 9% followed by 3% for the burger. These results reinforce the importance of knowing the target market and understanding that there are regional differences in preferences. Selling into any market requires consideration of these differences and any marketing and pricing strategy must incorporate these product preferences and willingness-to-pay.

In phase 2, participants were also asked a stated willingness-to-pay question using a beef product reference price. Ontario respondents generally stated a price lower than the beef reference price, while Quebec respondents stated a higher price. For the seasoned bison strips products in Ontario the responses ranged from 18% less for the roasted garlic flavour, 12% less for the ginger teriyaki flavour and 7% less for the Mesquite BBQ flavour. The bison garlic sausage also received a stated willingness-to-pay of 9% less than the beef reference price in Ontario. In Québec, respondents were only given one opportunity to state their willingness-to-pay for the seasoned bison strips and the stated price was 21% higher than the beef reference price of $6.99/450g package. For the bison garlic coil, Québec respondents stated a price 8% higher than the beef reference price of $4.99/350g package. Québec respondents had a greater acceptance of the products in the taste panel than the Ontario respondents, which may explain the stated willingness-to-pay differences. Further details of these results can be found in the phase 2 interim report (Hobbs and Cunningham, 2003).

From the phase 1 panels, responses to the question "***After Tasting Bison Today, I thought it was Better Than I Expected, Not as Good As I Expected, or About What I Expected***" suggest that with the exception of Québec, the majority of respondents indicated that bison was better than expected. In Ontario this response was given by 73%. Only 40% of those from Québec said it was better than expected, while half (51%) said it was what they would have expected. The responses for Saskatchewan and Alberta were quite similar at 61% and 52% respectively indicating bison was better than expected. BC had the highest percentage (15%) indicating the bison was not as good as expected. This is consistent with the relatively negative reception to bison by BC respondents.

Competitive Positioning of Bison with other Meat Products

Multidimensional scaling (MDS) is a technique used to gather information about the relationship between products. MDS provides a multiple dimensional spatial representation of the relationship between a group of products based on how *similar* these products are considered to be by consumers. Thus, respondents are asked to rate how similar they believe products to be.

The similarity of products can be measured across multiple dimensions. The number of dimensions is not pre-determined but is dependent on the number of important dimensions or attributes respondents use to compare the products when making the similarity judgement. MDS is a visual mapping of the relationship between products. The similarity relationships are transformed into distances between products in multidimensional space. It is used to explore the underlying basis for the spatial representation of the products, i.e. to identify the dimensions that appear to be important in determining the similarity between products. Proximities, which are numerical representations of the similarity or dissimilarity of two products, can be used to spatially place the products in a multidimensional map. Similar products are placed closer together, while products that differ are spatially farther apart (Kruskal and Wish, 1978).

One of the advantages of MDS is the ability to conceptualize in an n-dimension visual representation a large number of factors that consumers consider in determining the similarity of two items. With 15 meat products included in the phase 1 survey there are 105 comparisons between products. It would be difficult, if not impossible, to determine which products were more similar or dissimilar to each other using only the 105 similarity ratings. Using a multidimensional mapping that consolidates all these complex comparisons into a comprehensible "picture" of the relationship between the 15 products is very helpful.

If bison is considered to be a close substitute for other meat products, we can expect consumers to be price sensitive with respect to the price of these substitute products vis-à-vis bison prices. A rise in the price of a close substitute should increase demand for bison, while falling prices for substitutes will draw market share away from bison. Similarly, ability to charge price premiums over substitute products will depend on the closeness of this substitution relationship. Product differentiation strategies come into play as a strategic attempt to differentiate bison from its close substitutes, thereby reducing the symmetry of the cross-price elasticity relationship. Thus, as the price of substitutes relative to bison rise, bison products capture increased market share, yet the effect of a fall in the price of a substitute on the demand for bison is softened. Differentiating bison from its close substitutes enables the industry to compete on a number of fronts, rather than just on the basis of price. Given the higher per unit production costs expected for the bison industry relative to the beef industry from lower economies of scale, product differentiation and understanding the competitive positioning of bison relative to substitutes is important.

Fifteen different meat products were included in the written survey for the purposes of the MDS analysis: bison burger, bison kabob, bison striploin steak, beef burger, beef kabob, beef striploin steak, veal cutlets, breaded chicken burger, chicken souvlaki, pork chop, pork souvlaki, lamb chop, rack of lamb, lobster and hot dogs. The products were selected for their hypothesized relative comparability to bison. Beef was included because of anticipated similarities in taste and appearance to bison[5]. Chicken and pork were included as lean meat alternatives, given that bison is also a relatively lean meat[6]. Lamb, veal, and to some extent lobster, were included as 'specialty' meats that might compare with bison on the basis of a special occasion eating experience. A range of product forms spanning a spectrum of product qualities were included, from burgers, to souvlaki and kabobs, to high-end cuts such as striploin steak. Lobster and hot dog also act as "anchor" products in terms of quality and taste. Two approaches to the MDS analysis were taken. The first was to elicit simple pairwise comparisons of the 15 products on the basis of their similarity. The second approach compared the meat products on the basis of five specific factors (price, healthiness, taste, eating occasion, home vs. restaurant consumption).

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[5] Both are bovine animals. Bison is a red meat, similar in basic appearance to beef.

[6] Bison has been promoted by the industry as being lower in fat and cholesterol than many other traditional meats (Armstrong et al., 1998)

Using the average similarity ratings of respondents for each of the five locations from phase 1, the consolidated visual representation of the similarity rating for all participants in the study is provided in Figure 3.1. It is interesting to note the close spatial proximity of bison burger and quite similar. However the similarity between the beef and bison striploin steak and kabob products is not perceived to be as close. Certainly all bison products appear to be spatially closer to their beef counterparts than to any other meat products offered for comparison. This indicates that bison was perceived to be more similar to beef than to the other products. In all five locations the criteria most frequently stated by respondents that they had used to compare the 15 products were taste and appearance. This implies that the taste and appearance of bison was more similar to beef than the other meat products evaluated.

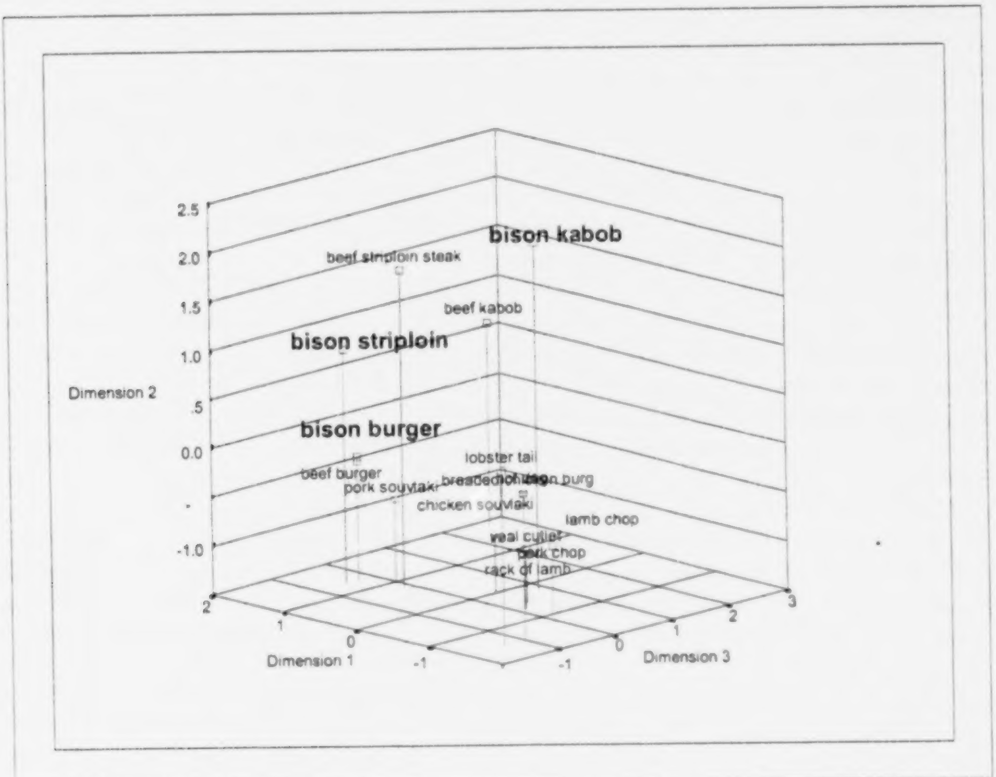

Figure 3.1. - **Three-Dimensional Spatial Representation Using Pairwise Similarity Ratings – Entire Sample (Phase 1)**

Figure 3.2 shows the visual mapping of the 15 meat products based on the average respondent ratings of the five factors[7] that were potentially important when purchasing and consuming a meat product. It is important to note that the spatial relationship between the 15 products changes when these specific factors are considered. All three bison products are spatially located close to one another and not as close to their beef counterparts as in Figure 3.1 when similarity ratings were used. This implies that based on price, healthiness, taste, whether the meat was a special occasion and home versus restaurant consumption, the bison products are perceived on average as more similar to each other than to their beef counterparts or any other meat product offered for evaluation.

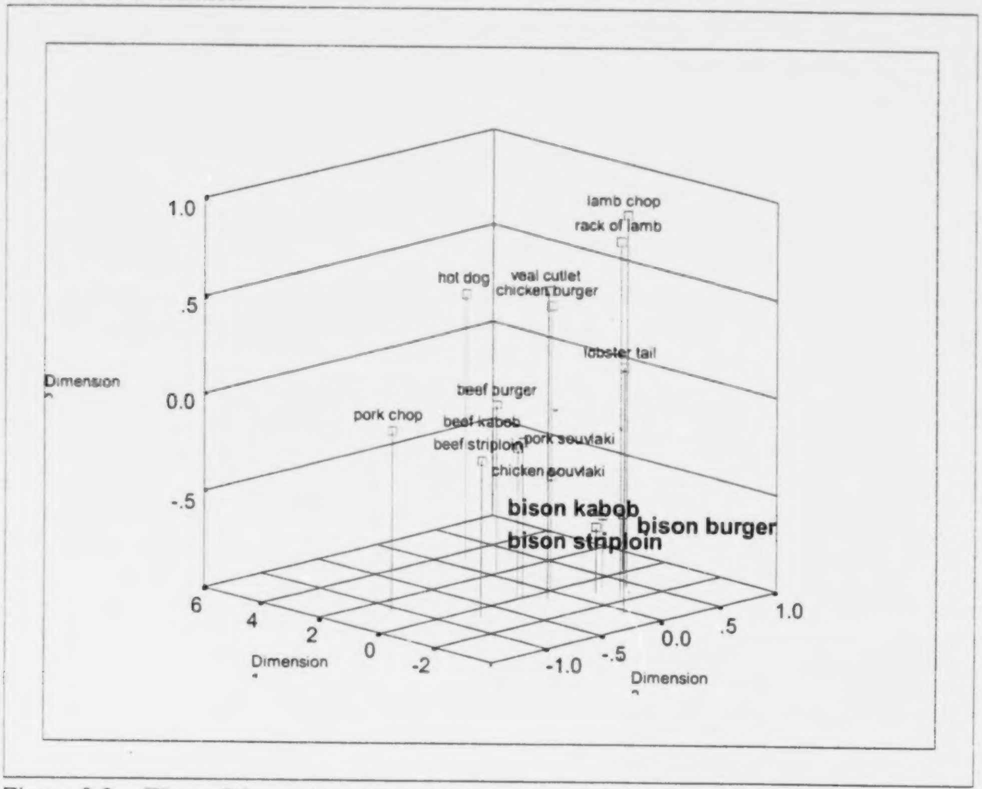

Figure 3.2. - **Three-Dimensional Spatial Representation Using Five-factor Ratings – Entire Sample (Phase 1)**

It is useful to assess the competitive positioning of bison versus other meats across the different locations in Canada.

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[7] Price, healthiness, taste, eating occasion, restaurant Vs home consumption.

Saskatchewan

Pairwise Similarity Analysis - Saskatchewan

The three-dimensional spatial representation of the similarity ratings by respondents is provided in Figure 3.3[8]. Visual inspection reveals that the bison and beef products are in close proximity to each other, suggesting that respondents considered bison more similar to beef than the other products offered for comparison. Analysing the product coordinates separately for each dimension indicates that dimension one may represent quality or cut of meat (type of product), while dimension three is type of meat (i.e. species). Dimension two was not readily interpreted using a visual inspection of the product coordinates, which suggests that this dimension is a consolidation of several attributes. Taste and appearance were the criteria most frequently mentioned by respondents as the basis on which they made the product comparisons. Thus, Saskatchewan respondents perceive the taste and appearance of bison to be quite similar to the corresponding beef cuts. Given that taste and appearance are closely associated with the species and cut of meat indicates that the visual analysis of the dimensions is consistent with the criteria respondents stated they used in making the pairwise comparisons.

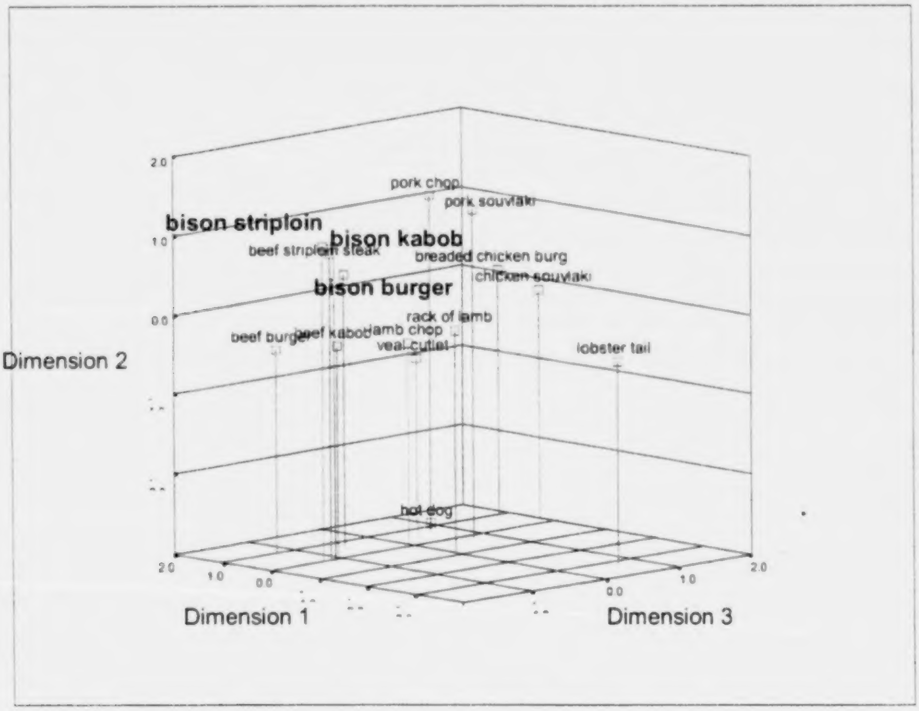

Figure 3.3. - **Three-Dimensional Spatial Representation Using Pairwise Similarity Ratings –**

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[8] SPSS software was used for the MDS analysis. Weighted Euclidean distances scaling model and the primary approach (untie tied proximities) were used.

Saskatchewan

Five-factor Analysis - Saskatchewan

Respondents were also asked to consider for each meat product the price, "healthiness", taste, whether it was a special occasion meat product, and whether the product was more likely to be eaten at home or in a restaurant relative to other meat products. Table 2 displays the average rating by respondents of each of the fifteen meat products with respect to the five factors. In general, the bison products were perceived to be higher in price (with the exception of bison burger) and healthier relative to other meats. Bison products are more likely to be considered a special occasion meat and more likely to be eaten in a restaurant than their beef counterparts.

Table 3.1 - Five-factor Ratings: Saskatchewan

Product	How do you think the price of these products usually compares to other meat products Very low = 1 Very high = 7	How "healthy" or "unhealthy" do you think each meat product is compared to other meat products Very healthy = 1 Very unhealthy = 7	What do you think about the taste of each meat product? Extremely Unpleasant = 1 Delicious =7	Do you consider this meat product to be everyday eating experience or a unique, special occasion eating experience? Very ordinary = 1 Very special = 7	Would you tend to eat this meat product at home or in a restaurant? Only at home = 1 Only in a restaurant = 7
Bison Burger	4.35	3.19	4.78	4.55	4.60
Bison Kabob	4.88	2.74	5.21	5.29	4.82
Bison Striploin	5.50	2.64	5.20	5.36	4.70
Beef Burger	2.76	4.62	4.69	1.73	3.60
Beef Kabob	4.70	3.17	5.11	4.31	4.17
Beef Striploin	5.58	3.17	5.49	4.67	3.94
Chicken Souvlaki	4.49	2.97	5.24	4.03	4.39
Chicken Burger	3.17	4.55	4.21	2.37	4.03
Pork Souvlaki	4.42	3.61	4.97	4.11	4.32
Pork Chop	3.94	3.82	4.42	2.50	2.56
Lamb Chop	5.61	3.73	4.10	5.31	5.28
Rack of Lamb	5.94	3.73	4.22	5.81	5.91
Veal Cutlet	4.93	3.79	4.13	4.46	5.06
Lobster	6.81	3.12	5.53	6.66	6.25
Hot Dog	1.65	6.16	2.99	1.60	2.22
Average	4.58	3.66	4.69	4.20	4.39

Figure 3.4 shows the three-dimensional spatial representation of the fifteen products using the five-factor rating information from Table 2. The spatial location of the products has changed, with bison not as tightly clustered with beef. Products appear to be positioned based on the type of cut rather than the type of meat (i.e. species). Thus, when consumers are 'forced' to think about products specifically in terms of their price, healthiness and taste, and the eating occasion/location – products become differentiated on the basis of type of meat cut. The interesting lesson here is that a marketing strategy that emphasizes these features can alter consumers' perceptions of the substitutability between products. As we shall see, for all five locations, basing the MDS analysis on the specific factors yields a different spatial relationship in terms of the competitive positioning of bison than the unstructured pairwise comparison.

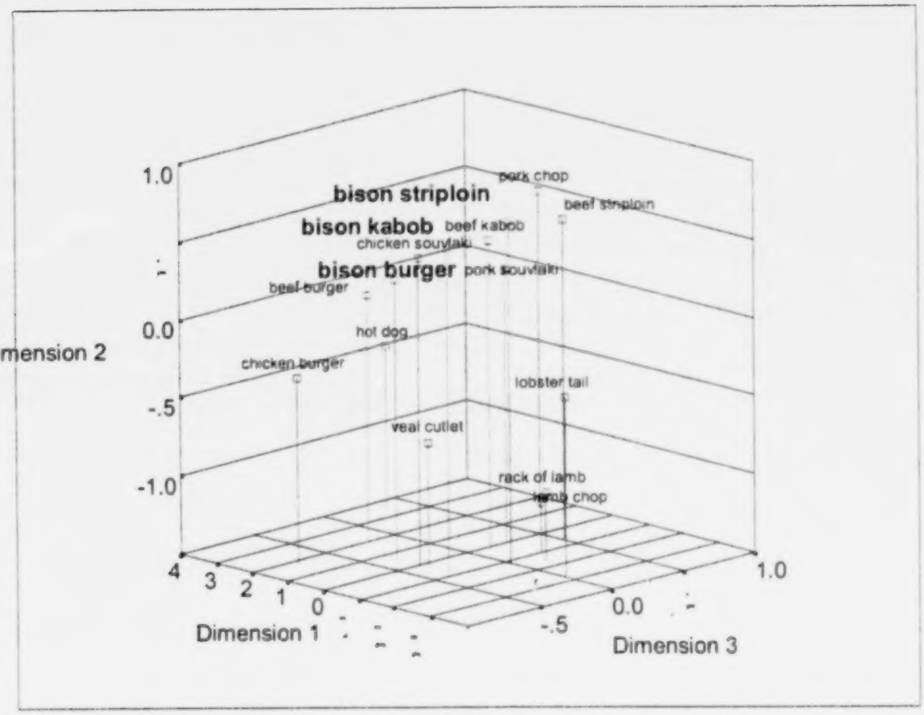

Figure 3.4. - **Three-Dimensional Spatial Representation Using Five-factor Ratings – Saskatchewan**

Cluster Analysis – Saskatchewan

To further assist in identifying close substitutes using both MDS approaches, cluster analysis was performed using the coordinates from the pairwise and five-factor MDS analyses. Using the MDS coordinates for each meat product as the selection criteria, the products are classified such that similar products are placed in the same cluster. Products in the same cluster are more similar to each other, based on the selection criteria, than to products in other clusters[9].

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[9] The Euclidean distance, calculated by taking the length of the hypotenuse of a right triangle for two points, was used to measure inter-object similarity (Hair et al, 1992). Z scores, which convert different data measures to a standard form, were calculated for all variables. Similar objects were placed into clusters using a hierarchical procedure referred to as the agglomerative method. The agglomerative method used was Ward's Method. Using an agglomerative method, each object starts out in a separate cluster and each subsequent step in the process brings the two closest clusters together, reducing the number of clusters by one with each step, until all individual objects are grouped into one large cluster (Hair et al., 1992). Using Ward's method, clusters are combined at each stage, such that the within-cluster sum of squares is minimized over all separate clusters obtainable by combining two clusters at the previous stage (Hair et al., 1992).

To determine how many clusters should be used, the cluster analysis was first run without specifying the number of clusters. The agglomeration coefficients and dendrogram, or tree graph, produced by the first analysis were used to determine the appropriate number of clusters[10].

Based on the results of the first cluster analysis, three to seven clusters were determined to be appropriate and the cluster analysis was run again with this specification. Table 3.2 shows the cluster membership based on the MDS coordinates for the pairwise similarity ratings and the five-factor ratings using seven clusters.

Table 3.2 - Product Clusters: Saskatchewan

Cluster	Membership Based on MDS Coordinates for Pairwise Similarity Ratings	Membership Based on Five-factor Ratings
Group 1	Beef Burger, **Bison Burger**, Beef Kabob	Beef Burger, Chicken Burger
Group 2	**Bison Kabob**, Beef Striploin, **Bison Striploin**	**Bison Kabob**, Beef Striploin, **Bison Striploin**
Group 3	Lamb Chop, Rack of Lamb, Veal Cutlet	Lamb Chop, Rack of Lamb, Veal Cutlet
Group 4	Chicken Burger, Chicken Souvlaki	Chicken Souvlaki, **Bison Burger**, Beef Kabob, Pork Souvlaki
Group 5	Pork chop, Pork Souvlaki	Pork Chop
Group 6	Lobster	Lobster
Group 7	Hot Dog	Hot Dog

Although there are several groupings that remain the same when the selection criteria are changed, a number of products shift between clusters. Confirming the earlier analysis, the pairwise similarity ratings tend to cluster on the basis of species (pork, chicken, lamb, beef/bison). The five-factor rating clusters, however, include both species and cut or type of product as their distinguishing features. Beef and chicken burgers form a separate group and chicken and pork souvlaki along with beef kabob form another group.

Note that using the factor ratings, bison burger is grouped with the two souvlaki products and the beef kabob, rather than with the beef and chicken burger. This clustering suggests that the bison burger has a quality dimension to it that sets it apart from the other burgers based on the five factors evaluated. Similarly, the bison kabob is clustered with the beef and bison striploin rather than with the beef kabob and souvlakis, again suggesting that bison has an additional quality dimension. The bison burger and bison kabob were two of the products that respondents had tasted in the sensory analysis. The sensory results show that 55 percent of Saskatchewan respondents rated the overall acceptability of the bison burger as very or extremely acceptable compared with 48 percent for the entire sample. The bison kabob also received very favourable ratings in the sensory panels, with 71 percent of Saskatchewan respondents rating its overall acceptability as either very or extremely acceptable compared with 56 percent for the entire sample. The favourable sensory experience may partially account for the bison burger and bison kabob being perceived as having attributes that set them apart from their beef counterparts. A marketing strategy that builds on the basic similarity between beef and bison in terms of consumer acceptability towards a new product but that goes on to differentiate bison in terms of additional quality characteristics may be appropriate.

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[10] The agglomeration coefficients are the squared Euclidean distance between the two objects or clusters being combined (Hair et al., 1992). The dendrogram provides a graphical representation of the cluster combinations.

British Columbia

Pairwise Similarity Analysis – British Columbia

Figure 3.5 shows the three-dimensional representation of the pairwise similarity ratings. The bison products are located closer to the beef products than the other products offered for comparison. However, there is not a tight cluster of the products, with bison kabob closest to beef striploin, while bison striploin and bison burger are separated from the other beef and bison products. Evaluation of the product coordinates suggests that dimension 1 represents the cut of meat, while dimension 2 may denote quality and/or price, and the third dimension represents the species or type of meat. A review of the stated criteria suggests that respondents frequently used taste and appearance to determine the similarity of the products. Taste and appearance are related to the cut, quality and type of meat and so the stated and revealed dimensions appear to be consistent. Visually it appears that although BC respondents perceived some similarity between bison and beef, this relationship was not strong and tight clustering between bison and beef products is not evident unlike in Saskatchewan. A higher percentage (69%) of BC respondents had not tried bison before. This is very different from Saskatchewan where previous experience with bison was more common.

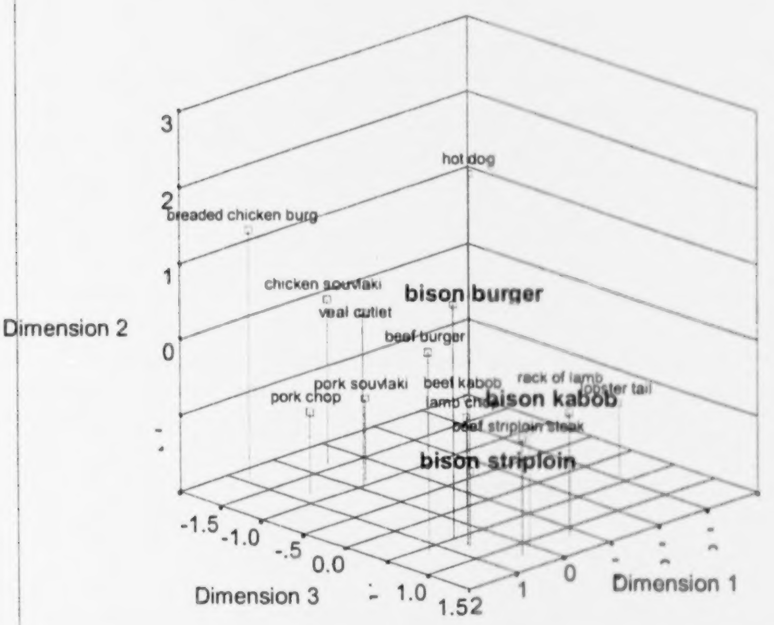

Figure 3.5. - **Three-Dimensional Spatial Representation Using Pairwise Similarity Ratings – British Columbia**

Five-factor Analysis – British Columbia

Table 3.3 shows the average five-factor rating for the fifteen meat products. The bison and beef products had a similar expected price relationship with respect to other meat products. Respondents expected bison burgers to be relatively higher in price than the beef burger. Oddly, the beef striploin and kabob were anticipated on average to be higher in price relative to other meats than their bison counterparts. The bison striploin, kabob and burger were all rated as "healthier" relative to other meat products than their beef equivalents. All three bison products received low ratings on average for taste relative to the beef products. Only the hot dog had an average "tastiness" rating lower than the three bison products. This is consistent with the sensory results in which British Columbia respondents were not as receptive to the bison products as were respondents in other locations. The bison burger and kabob were rated as very and extremely acceptable by only 25% and 44% of BC respondents respectively. Bison products were considered more of a special occasion meat and more likely to be eaten in a restaurant relative to the beef products listed.

Table 3.3. - Five-factor Ratings: British Columbia

Product	How do you think the price of these products usually compares to other meat products Very low = 1 Very high = 7	How "healthy" or "unhealthy" do you think each meat product is compared to other meat products Very healthy = 1 Very unhealthy = 7	What do you think about the taste of each meat product? Extremely Unpleasant = 1 Delicious =7	Do you consider this meat product to be everyday eating experience or a unique, special occasion eating experience? Very ordinary = 1 Very special = 7	Would you tend to eat this meat product at home or in a restaurant? Only at home = 1 Only in a restaurant = 7
Bison Burger	3.81	3.39	3.59	3.89	4.27
Bison Kabob	4.33	2.92	4.38	4.79	4.66
Bison Striploin	4.85	2.85	4.35	4.70	4.45
Beef Burger	2.70	4.71	4.49	1.87	3.81
Beef Kabob	4.44	3.28	4.95	3.98	4.05
Beef Striploin	5.27	3.33	5.38	4.49	3.65
Chicken Souvlaki	4.10	2.77	5.32	4.04	4.66
Chicken Burger	3.41	4.29	4.41	2.26	4.33
Pork Souvlaki	4.22	3.54	4.66	4.19	4.84
Pork Chop	4.21	3.63	4.89	2.75	2.68
Lamb Chop	5.55	3.53	4.64	5.21	4.79
Rack of Lamb	6.08	3.52	4.95	5.78	5.63
Veal Cutlet	5.38	3.58	4.86	4.81	4.62
Lobster	6.80	3.11	6.08	6.62	6.23
Hot Dog	1.56	6.06	3.41	1.85	2.95
Average	4.45	3.63	4.69	4.08	4.37

The three-dimensional spatial representation of the fifteen meat products using the five-factor ratings is provided in Figure 3.6. The cluster of the three bison products located separate from all other meat products is particularly striking. On average BC respondents were the least receptive to the bison products tasted in the sensory portion of the study and this clustering of the bison products may represent respondents' attitude that bison is quite different from beef and other meat products. As indicated earlier, British Columbia also had a high percentage (69%) of respondents who had never before tried bison and this may have contributed to the spatial isolation of the bison meat products in the diagram.

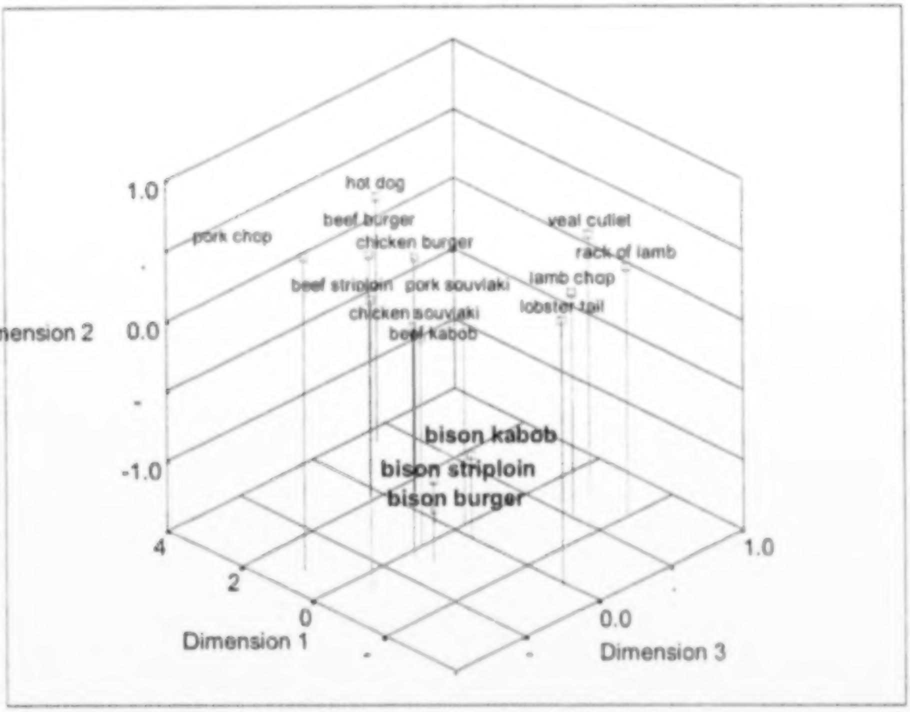

Figure 3.6. - **Three-Dimensional Spatial Representation Using Five-Factor Ratings – British Columbia**

Cluster Analysis – British Columbia

Cluster analysis was applied to the MDS analysis using seven clusters. Table 3.4 shows the cluster membership based on the pairwise similarity rating and then on the five-factor ratings. Cluster membership based on the pairwise similarity ratings shows the bison burger grouped with the beef burger and bison kabob and striploin grouped with their beef counterparts. Cluster membership seems to be based primarily on species, with the exception of the beef and bison burger being grouped separately from the other beef and bison products. However this picture changes considerably when the five-factor ratings are used to establish the clusters, with the bison products grouped together but separately from the beef products. This is consistent with the spatial representation of the five-factor ratings, which shows the bison products separated from the other meat products. Based on the combined five factors of price, healthiness, taste, special occasion and home versus restaurant consumption, bison is not perceived as being very similar to the other products listed. Cluster membership based on the five factors is primarily based on the type of cut. The clustering of the bison burger with the other bison products probably represents a quality image associated with the bison burger that distinguishes it from the beef and chicken burger group.

Table 3.4. - Product Clusters: British Columbia

Cutter	Membership Based on MDS Coordinates for Pairwise Similarity Ratings	Membership Based on Attribute Ratings
Group 1	Beef Burger, **Bison Burger**	Beef Burger, Chicken Burger
Group 2	Chicken Burger, Chicken Souvlaki, Veal Cutlet	Chicken Souvlaki, Pork Souvlaki, Beef Striploin, Beef Kabob
Group 3	Lamb Chop, Rack of Lamb,	Lamb Chop, Rack of Lamb, Veal Cutlet
Group 4	**Bison Kabob, Bison Striploin,** Beef Kabob, Beef Striploin,	**Bison Burger, Bison Kabob, Bison Striploin**
Group 5	Pork chop, Pork Souvlaki	Pork Chop
Group 6	Lobster	Lobster
Group 7	Hot Dog	Hot Dog

Québec

Pairwise Similarity Analysis - Québec

The three-dimensional MDS analysis based on the pairwise similarity rating of the fifteen products is provided in Figure 3.7. The bison kabob is spatially located close to the beef kabob, while the bison striploin is somewhat separate from all other products but closest to the beef striploin. The bison burger is not closely associated with the beef burger and spatially appears closer to the pork souvlaki. With the exception of the kabobs, there does not appear to be a close association between the bison products and their beef counterparts. Analysis of the coordinates of each product indicates that dimension 1 is probably the cut of meat, dimension 2 quality and dimension 3 type of meat or species. Similar to the other locations, the most frequently stated criteria for determining the similarity of the products were taste and appearance. Clearly, Québec respondents perceive the taste and appearance of bison to be somewhat different from beef.

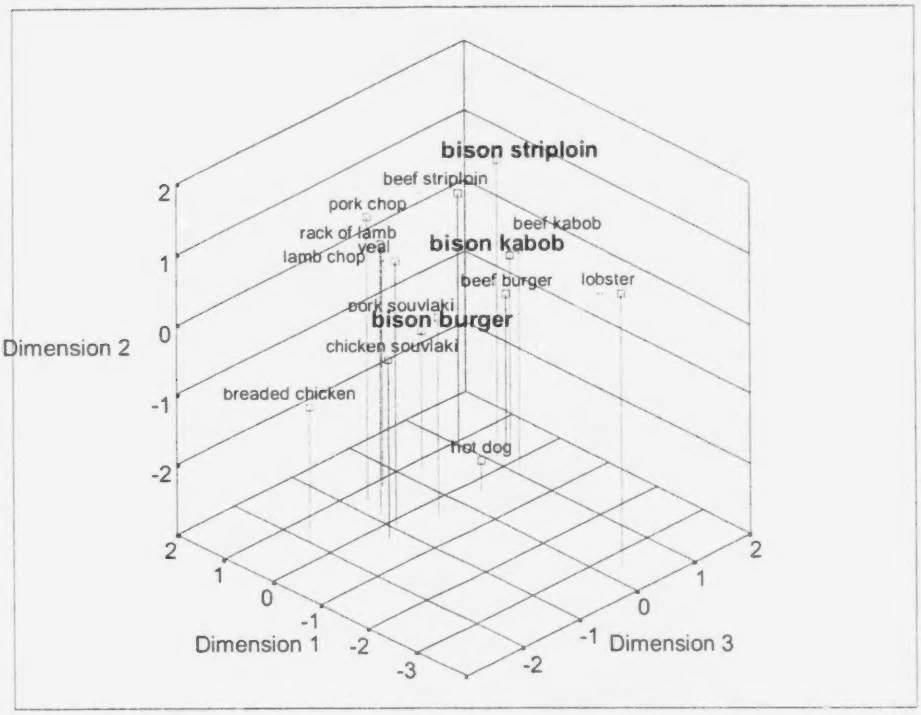

Figure 3.7. - **Three-Dimensional Spatial Representation Using Pairwise Similarity Ratings – Québec**

Five-Factor Analysis – Québec

The rating of the meat products based on the five factors is provided in Table 3.5. With the exception of the striploin, the bison products were considered on average to be higher in price relative to other meat products than their beef counterparts. Ratings for relative "healthiness" and taste were similar for the beef and bison products. Bison kabob and striploin tended to be seen more as a special occasion meat product. Consistent with other locations, the bison products were more likely to be eaten in a restaurant relative to the beef products.

Table 3.5. - Five-Factor Ratings: Québec

Product	How do you think the price of these products usually compares to other meat products Very low = 1 Very high = 7	How "healthy" or "unhealthy" do you think each meat product is compared to other meat products Very healthy = 1 Very unhealthy = 7	What do you think about the taste of each meat product? Extremely Unpleasant = 1 Delicious =7	Do you consider this meat product to be everyday eating experience or a unique, special occasion eating experience? Very ordinary = 1 Very special = 7	Would you tend to eat this meat product at home or in a restaurant? Only at home = 1 Only in a restaurant = 7
Bison Burger	4.29	2.95	4.14	3.57	4.08
Bison Kabob	5.13	2.47	4.66	5.15	4.82
Bison Striploin	5.25	2.52	4.54	5.10	4.71
Beef Burger	2.86	4.16	4.04	2.21	3.37
Beef Kabob	4.52	2.60	4.86	3.96	3.54
Beef Striploin	5.36	2.45	5.26	4.52	3.34
Chicken Souvlaki	3.76	2.90	4.40	3.43	4.09
Chicken Burger	3.27	4.70	3.51	2.41	3.79
Pork Souvlaki	3.87	3.35	4.27	3.41	3.87
Pork Chop	4.02	2.92	4.48	2.74	2.38
Lamb Chop	5.71	2.69	4.81	5.32	4.06
Rack of Lamb	5.65	2.64	4.92	5.50	4.69
Veal Cutlet	5.41	2.36	4.96	4.70	3.84
Lobster	6.51	2.15	5.99	6.40	4.75
Hot Dog	1.44	6.13	2.99	2.38	2.73
Average	4.47	3.13	4.52	4.05	3.87

Spatial representation of the five-factor ratings using MDS analysis is provided in Figure 3.8. Again, the spatial relationship between the bison meat products and the other meat products changes relative to the pairwise similarity comparison. The bison kabob and striploin are located in relative close spatial proximity but are distanced from the corresponding beef products. Similarly the bison burger seems relatively isolated from the other meat products. Visually the back left side of the diagram contains the lower quality cuts such as the burgers and hot dog, while the front and right side of the graph features the higher quality cuts such as the lobster, kabobs, striploin and souvlaki. The bison striploin and kabob received on average similar ratings for all five factors, accounting for their close proximity in the diagram.

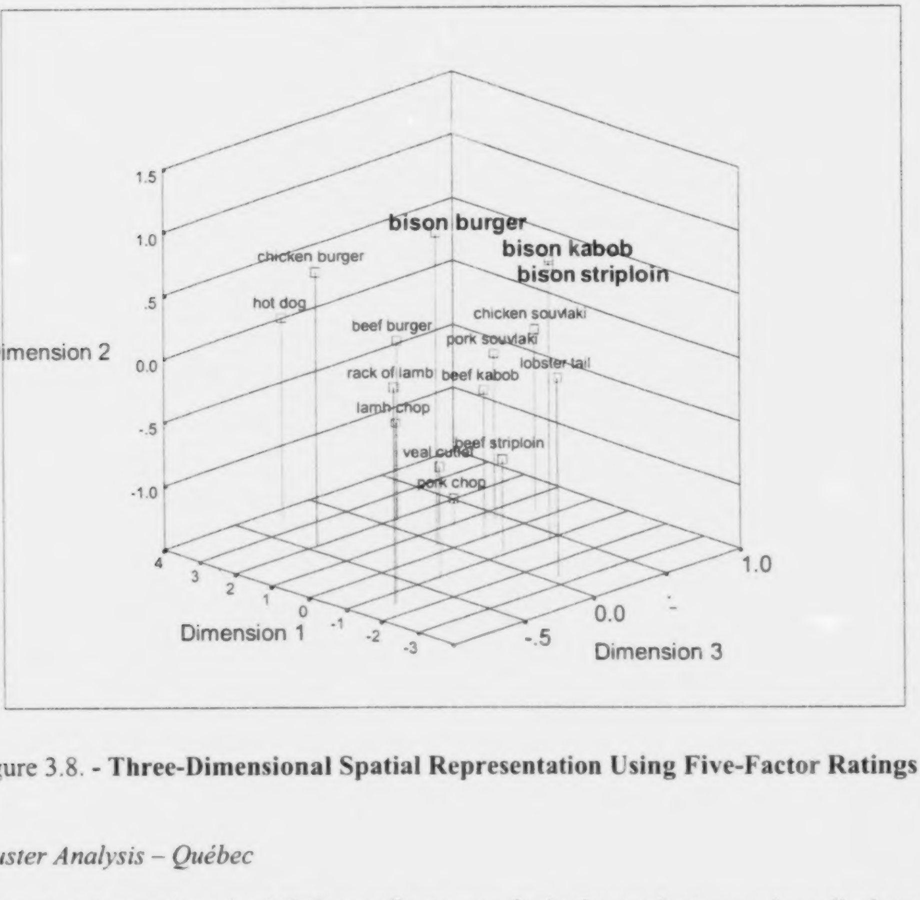

Figure 3.8. - **Three-Dimensional Spatial Representation Using Five-Factor Ratings - Québec**

Cluster Analysis – Québec

Clustering the products by MDS coordinates results in the product groupings displayed in Table 3.6. Using the MDS pairwise similarity ratings the bison burger and kabob are grouped together with the beef burger and kabob, while the bison and beef striploin steaks form a separate cluster. The cut of meat seems to be the primary basis for clustering. Using the five-factor ratings, however, membership appears to be based on cut but also quality and/or price. The bison burger is not grouped with the other burgers but is clustered with the chicken and pork souvlaki. The bison striploin steak and bison kabob are clustered with rack of lamb while the beef striploin and kabob are grouped with the veal cutlet and lamb chop. This suggests a quality distinction between bison and beef. Approximately 50 percent of Québec respondents rated the bison burger as very or extremely acceptable in the sensory evaluation while 66 percent gave the kabob these high ratings. The product clusters suggest that Québec respondents perceive bison as distinct from beef based on the five factors evaluated. Marketing strategies in Québec could capitalize on this distinction to build product differentiation awareness, and in emphasizing the unique properties of bison. Québec consumers typically have access to a wider variety of 'specialty' meats than is common in other parts of Canada. This likely makes them more receptive to new meat products but also more discerning as a consumer group.

Table 3.6. - Product Clusters: Québec

Cutter	Membership Based on MDS Coordinates for Similarity Ratings	Membership Based on Attribute Ratings
Group 1	Beef Burger, **Bison Burger**, Beef Kabob, **Bison Kabob**	Beef Burger, Chicken Burger
Group 2	Chicken Burger	Pork Chop
Group 3	Lamb Chop, Rack of Lamb, Pork Chop, Veal Cutlet	Lamb Chop, Veal Cutlet, Beef Striploin, Beef Kabob
Group 4	**Bison Striploin**, Beef Striploin,	**Bison Kabob**, **Bison Striploin**, Rack of Lamb
Group 5	Pork Souvlaki Chicken Souvlaki	Chicken Souvlaki, Pork Souvlaki, **Bison Burger**
Group 6	Lobster	Lobster
Group 7	Hot Dog	Hot Dog

Ontario

Pairwise Similarity Analysis – Ontario

The three-dimensional spatial representation of the MDS analysis based on the pairwise similarity ratings for the fifteen meat products is provided in Figure 3.9. In this diagram the beef and bison products, with the exception of the bison burger are tightly clustered indicating that Ontario respondents regard bison and beef products as quite similar. Analysis of the MDS coordinates for each product revealed a relationship between dimension 1 and the cut of the meat product. Dimension 2 depicts type of meat or species, while dimension 3 is hard to distinguish as representative of one specific attribute and may be a consolidation of several attributes. Consistent with the other sites, taste was the most frequently cited criteria used by respondents when making the similarity judgements, followed by appearance. The relatively tight clustering of the bison and beef products confirms that Ontario respondents perceived the taste and appearance of bison to be quite similar to beef. The number of respondents who had never tried bison (69%) was high compared to other locations such as Saskatchewan (27%) and Quebec (52%). Marketing strategies in Ontario could capitalize on this perceived similarity in building consumer acceptance of bison during the early stages of market penetration.

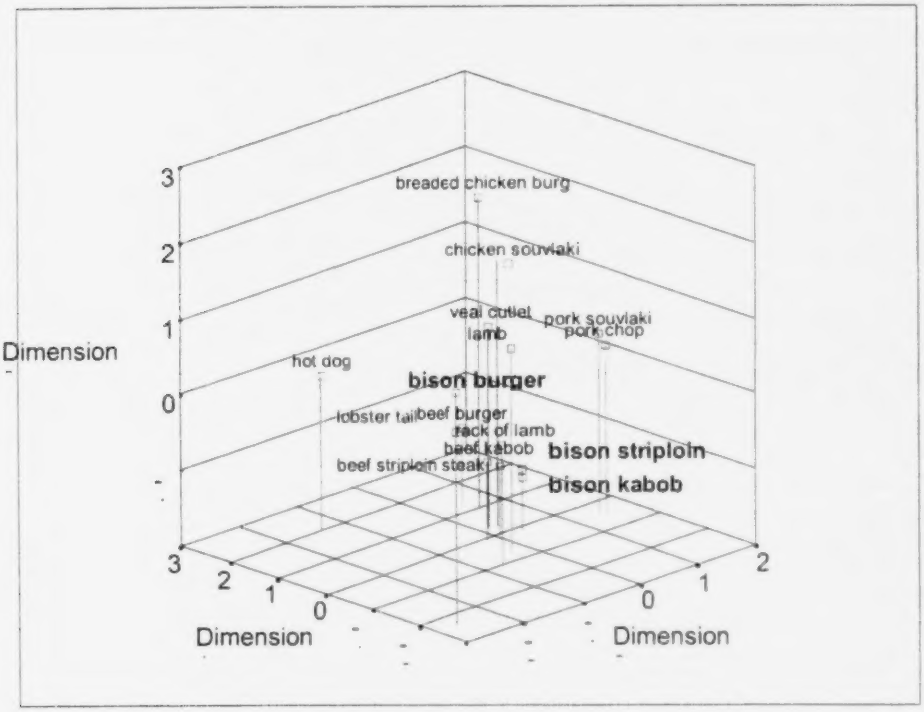

Figure 3.9. - **Three-Dimensional Spatial Representation Using Pairwise Similarity Ratings – Ontario**

Five-Factor Analysis – Ontario

Table 3.7 shows the average five-factor ratings. With the exception of the bison burger, respondents expect the price of bison and beef meat products to be about the same relative to other meat products. Bison is regarded as a somewhat slightly healthier meat than beef, but beef was rated as tasting better than bison. Ontario respondents gave the four bison products from the taste test mixed reviews relative to the entire sample. The bison stew and deli roast got overall acceptability ratings of very or extremely acceptable by 60% and 62% of Ontario respondents respectively compared with 52% and 57% respectively for the entire sample. The burger was given an overall rating of very and extremely acceptable rating by 47% of Ontario respondents, very close to the 48% of the entire sample who gave it this same rating. The kabob received overall ratings of very and extremely acceptable by 42% of Ontario respondents compared with 56% of the entire sample. Bison was more likely to be considered a special occasion meat and more likely to be eaten in a restaurant than at home, consistent with the finding in other regions.

Table 3.7. - Five-Factor Ratings: Ontario

Product	How do you think the price of these products usually compares to other meat products Very low = 1 Very high = 7	How "healthy" or "unhealthy" do you think each meat product is compared to other meat products Very healthy = 1 Very unhealthy = 7	What do you think about the taste of each meat product? Extremely Unpleasant = 1 Delicious =7	Do you consider this meat product to be everyday eating experience or a unique, special occasion eating experience? Very ordinary = 1 Very special = 7	Would you tend to eat this meat product at home or in a restaurant? Only at home = 1 Only in a restaurant = 7
Bison Burger	3.98	3.83	4.43	3.93	3.99
Bison Kabob	4.62	3.22	4.59	5.07	4.25
Bison Striploin	5.26	3.13	5.24	5.37	4.54
Beef Burger	2.80	4.74	4.66	1.71	3.48
Beef Kabob	4.65	3.37	5.36	4.34	3.95
Beef Striploin	5.47	3.40	5.86	4.85	3.91
Chicken Souvlaki	4.25	2.76	5.32	4.30	4.83
Chicken Burger	3.13	4.68	4.12	2.22	3.57
Pork Souvlaki	4.37	3.75	4.78	4.39	4.83
Pork Chop	3.95	3.87	4.76	2.84	2.54
Lamb Chop	5.40	3.53	4.42	5.17	4.25
Rack of Lamb	5.93	3.57	4.53	6.04	5.05
Veal Cutlet	5.10	3.55	4.79	4.65	4.24
Lobster	6.83	3.08	5.54	6.48	5.97
Hot Dog	1.51	6.34	3.38	1.46	2.27
Average	4.48	3.79	4.79	4.19	4.11

Figure 3.10 depicts the three-dimensional relationship between the fifteen meat products based on the factor ratings from Table 3.7. Spatially the bison and beef products are somewhat more dispersed in this graph, suggesting that bison was not perceived to be as similar to beef when the five factors of price, health, taste and eating location/occasion are specifically considered. As with Québec, lower quality cuts such as the hot dog and burgers appear on the left side of the diagram, with higher quality cuts such as the striploin steak, souvlaki and lobster tail on the right side. After building product acceptability in terms of similarity to beef, an industry marketing strategy could then develop product differentiation strategies for bison based on quality, health, and eating occasion.

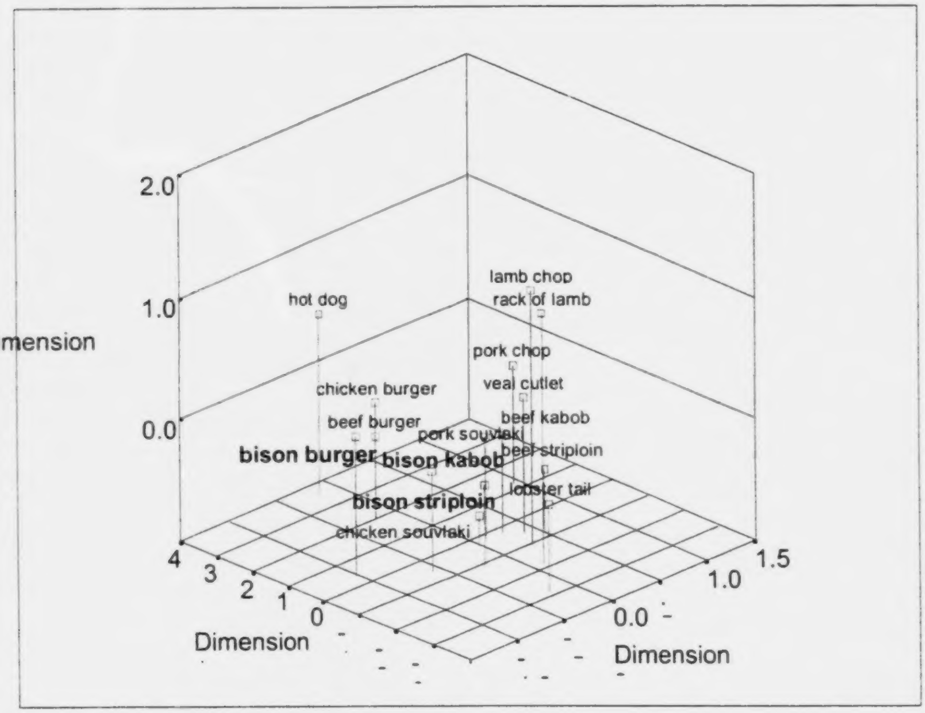

Figure 3.10. - **Three-Dimensional Spatial Representation Using Five-Factor Ratings Ontario**

Cluster Analysis – Ontario

Product clusters based on the two MDS analyses are shown in Table 3.8. The pairwise similarity rating clusters are primarily species (meat)-based, but the bison and beef burgers are in a separate cluster from the other beef and bison products. Clustering on the basis of the five-factor ratings also yields products grouped by type of meat but with some evidence of quality differentiation. The bison burger is not grouped with the other two burgers, suggesting there is a quality image associated with the bison burger that differentiates it from other burgers. The kabob was grouped with the bison burger rather than the beef kabob, again probably reflecting a quality differentiation. In the sensory evaluation, 47 percent of Ontario respondents rated the bison burger as extremely or very acceptable, while 42% gave the bison kabob these ratings. These are not as favourable evaluations as other locations (notably Saskatchewan and Alberta). This may be a reflection of the higher percentage of respondents in Ontario who had not previously tried bison (compared with Saskatchewan and Alberta). The implication that bison can be differentiated from beef on the basis of quality and taste dimensions is a double-edged sword. Bison has the potential to be viewed as a higher quality product, but a lack of familiarity with bison leaves the market vulnerable if a consistent product quality is not maintained.

Table 3.8. - Product Clusters: Ontario

Cutter	Membership Based on MDS Coordinates for Pairwise Similarity Ratings	Membership Based on Attribute Ratings
Group 1	Beef Burger, **Bison Burger**	Beef Burger, Chicken Burger
Group 2	Chicken Burger, Chicken Souvlaki, Veal Cutlet	Chicken Souvlaki, Beef Striploin, Beef Kabob, **Bison Striploin**
Group 3	Lamb Chop, Rack of Lamb,	Lamb Chop, Veal Cutlet, Pork Souvlaki, **Bison Burger, Bison Kabob**
Group 4	**Bison Striploin**, Beef Striploin, Beef Kabob, **Bison Kabob**	Rack of Lamb
Group 5	Pork Souvlaki, Pork Chop	Pork Chop
Group 6	Lobster	Lobster
Group 7	Hot Dog	Hot Dog

Alberta

Pairwise Similarity Analysis – Alberta

MDS analysis of the pairwise similarity ratings resulted in the three-dimensional representation in Figure 3.11. Visually the bison meat products appear to be close to their beef counterparts but not clustered together. There is not a close spatial relationship between the bison products, suggesting that type of meat product was a more influential criterion for the similarity ratings than species. Inspection of the individual dimensions reveals that dimension 1 represents some aspect of quality or price, dimension 2 is probably the species (type of meat) and dimension 3 may be cut of meat (type of meat product). As with all other locations, taste and appearance were the most frequently mentioned criteria for making the product comparisons. It would appear that Alberta respondents perceive the bison striploin steak, kabob and burger to be similar to their beef equivalents. However respondents did not consider all cuts of bison and beef to be similar, therefore the groupings are based on the type of product.

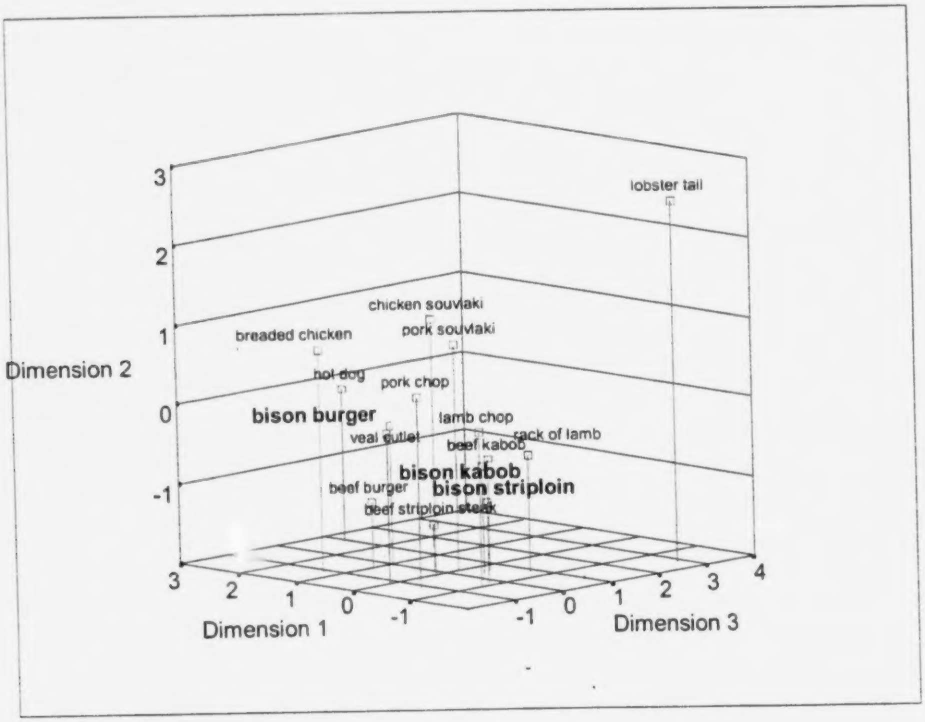

Figure 3.11. - **Three-Dimensional Spatial Representation Using Pairwise Similarity Ratings – Alberta**

Five-Factor Analysis – Alberta

Table 3.9 displays the five-factor ratings for Alberta. With the exception of the striploin steak, the bison products are perceived to be higher in price relative to other meats than their beef counterparts, with the bison burger prices expected to be similar to the beef kabob and chicken souvlaki. The bison striploin steak and kabob received the highest ratings for healthiness, with the bison burger getting the fourth highest rating behind beef kabob. When asked about taste, the bison products were rated similar to the beef kabob and striploin. Consistent with all other locations, the three bison products were regarded as a special occasion meat and were more likely to be eaten in a restaurant rather than at home compared with their beef equivalents. These favourable ratings are consistent with the sensory results for the bison burger and bison kabob in Alberta, which were rated as extremely or very acceptable by 53 percent and 57 percent of Alberta participants respectively.

Table 3.11. - Five-Factor Ratings: Alberta

Product	How do you think the price of these products usually compares to other meat products Very low = 1 Very high = 7	How "healthy" or "unhealthy" do you think each meat product is compared to other meat products Very healthy = 1 Very unhealthy = 7	What do you think about the taste of each meat product? Extremely Unpleasant = 1 Delicious =7	Do you consider this meat product to be everyday eating experience or a unique, special occasion eating experience? Very ordinary = 1 Very special = 7	Would you tend to eat this meat product at home or in a restaurant? Only at home = 1 Only in a restaurant = 7
Bison Burger	4.46	2.88	4.93	4.24	4.42
Bison Kabob	4.92	2.53	5	5.32	4.69
Bison Striploin	5.29	2.45	5.28	5.37	4.63
Beef Burger	2.76	4.22	4.52	1.73	3.62
Beef Kabob	4.6	2.86	5.23	4.3	4.03
Beef Striploin	5.51	3.00	5.68	4.53	3.77
Chicken Souvlaki	4.28	3.07	4.67	4.33	4.82
Chicken Burger	3.42	4.31	4.09	2.32	4.09
Pork Souvlaki	4.65	3.45	4.65	4.43	4.84
Pork Chop	4.22	3.40	4.81	2.78	2.51
Lamb Chop	5.63	3.11	4.56	5.23	4.8
Rack of Lamb	6.17	3.04	4.8	5.94	5.65
Veal Cutlet	5.26	3.16	4.89	4.87	4.44
Lobster	6.8	3.26	5.72	6.62	6.1
Hot Dog	1.55	5.88	3.27	1.56	2.38
Average	4.63	3.37	4.81	4.24	4.32

Figure 3.12 displays the spatial MDS representation for the five-factor ratings reported above. The separation of beef striploin steak from the other products based on dimension 2 is interesting. Pork chop received a similar rating based on this dimension. The spatial proximity of the bison products to lobster tail indicates that on the combined basis of price, healthiness, taste and eating occasion/location, Alberta perceive lobster tail to be substitutable with bison to some degree. Alberta is the only region in which this result is evident. The generally favourable response to bison meat in Alberta may signal a higher quality image for bison and help to explain the relatively close proximity to lobster tail.

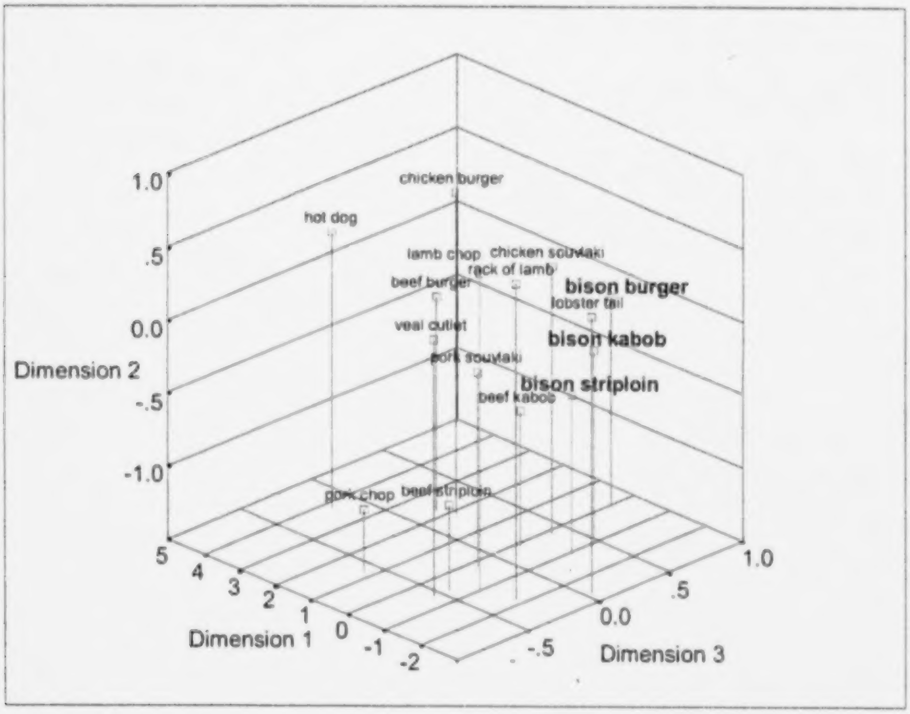

Figure 3.12. - **Three-Dimensional Spatial Representation Using Five-Factor Ratings – Alberta**

Cluster Analysis – Alberta

Cluster analysis on the product coordinates for the MDS analyses are shown in Table 3.10. Membership based on the pairwise similarity ratings is based largely on the type of product (cut). The fact that beef striploin steak is grouped with the beef and bison burger, rather than the bison striploin steak and kabobs is difficult to explain. It implies that other criteria were influencing the similarity ratings. The product clusters change when the five-factor analysis is used as the basis for the clusters. A quality and/or price theme is evident, in combination with the cut of meat. The bison burger is grouped with the beef striploin steak and kabob, suggesting that it is perceived somewhat differently than the traditional burgers. Marketing strategies that emphasize a quality image for bison may help differentiate bison in the traditional burger market. Bison products appear to have a prestige image that separates them from beef in Alberta.

Table 3.10. - Product Clusters: Alberta

Cluster	Membership Based on MDS Coordinates for Pairwise Similarity Ratings	Membership Based on Five-Factor Ratings
Group 1	Beef Burger, **Bison Burger**, Beef Striploin	Beef Burger, Chicken Burger
Group 2	Chicken Burger	**Bison Striploin**, **Bison Kabob**
Group 3	Lamb Chop, **Bison Striploin**, Pork Chop, Veal Cutlet	Lamb Chop, Veal Cutlet, Pork Souvlaki, , Chicken Souvlaki,
Group 4	Rack of Lamb, Beef Kabob, **Bison Kabob**	**Bison Burger**, Beef Striploin, Beef Kabob,
Group 5	Pork Souvlaki, Chicken Souvlaki	Pork Chop
Group 6	Lobster	Lobster, Rack of Lamb
Group 7	Hot Dog	Hot Dog

Summary of Competitiveness Analysis

Almost all respondents considered bison to be more similar to beef in taste and appearance than the other meat products evaluated. Although this relationship was stronger in some locations than others, this association between bison and beef was evident for all groups. In Saskatchewan and Ontario the spatial clustering of bison products with the comparable beef cuts was very pronounced, while in BC and Quebec the relationship was more subtle. However when consumers are asked to think about products specifically in terms of their price, healthiness, taste and the eating cccasion/location, the spatial location of the bison products relative to the other meats changes. Bison begins to move away from beef. In BC, Alberta and Quebec the bison products were clustered together but relatively separate spatially from other meat products, while in Saskatchewan and Ontario there is spatial clustering based on cut or type of meat product. The interesting lesson here is that a marketing strategy that emphasizes the features that distinguish bison from other comparable meat products can alter consumers' perceptions of the substitutability between products. The competitive positioning of bison can be influenced depending on the attributes being considered. A well-developed marketing strategy can help to position bison so that it is sufficiently "different" from other meat products in the consumer's mind. If this is achieved, as the price of substitutes relative to bison rise, bison products could capture a greater market share, yet it also mitigates the influence on the demand for bison of a reduction in the price of a competitor product.

4. MARKETING BISON

Price Sensitivity – Stated Willingness-to-pay

In the sensory portion of the phase 1, respondents were given a reference price for a beef product comparable to each bison product they tasted and asked to indicate what they would be willing to pay for the bison product. Table 4.1 summarises the mean and standard deviation values for the stated willingness-to-pay (WTP) for each product at each site. Note that the variance in the WTP is highest for BC, indicating a wider variety of opinions among BC respondents.

Table 4.1. - Comparing Willingness-to-pay in Phase 1

Willingness to Pay'	Reference	BC (2)		Alberta		Sask (1)		Quebec		Ontario	
Mean	Price Beef	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev	Mean	St. Dev
Burger	$0.75/4 oz. patty	$ 0.77	1.07	$ 0.96	0.44	$ 0.93	0.4	$ 0.84	0.44	$ 0.88	0.43
Stew	$2.00/8 oz. serving	$ 1.98	2.06	$ 2.13	0.91	$ 2.13	0.75	$ 2.16	0.84	$ 1.88	0.66
Kabob	$2.00/4 oz. meat	$ 2.17	2.17	$ 2.26	0.89	$ 2.40	0.75	$ 2.43	1.04	$ 1.86	0.58
Deli Roast	$1.6/4 oz. meat	$ 1.61	2.02	$ 1.79	0.65	$ 1.62	0.61	$ 1.60	0.66	$ 1.61	0.37

Figure 4.1 presents the same mean WTP information in terms of the percentage difference ("premium" or "discount") that respondents in each location said they would be willing to pay relative to the reference price of a comparable beef product. Using the average stated WTP, the largest premiums over the comparable beef prices are for the burger and kabob. Alberta and Saskatchewan are the highest for the burger at 28% and 24% respectively. For the kabob, Québec respondents said they would pay the highest premium at 22% followed closely by Saskatchewan at 20%. For Ontario the highest stated premium is for the burger at 17%, while for all other products the value is very low or negative. Consistent with the generally negative response of BC to the products, the average premiums on all products are quite low, the highest being the kabob at 9% followed by 3% for the burger.

From a marketing perspective it is interesting to note that the premiums respondents were willing to pay varied considerably between location and between the products. These variations would suggest that not all bison products could command the same, if any, price premium relative to beef. Product development, marketing and the target market chosen all influence the appropriate pricing strategy for specific bison products. Given the large variations in prices between products and markets it will be important for the bison industry to test market specific products before developing and implementing a large-scale marketing strategy.

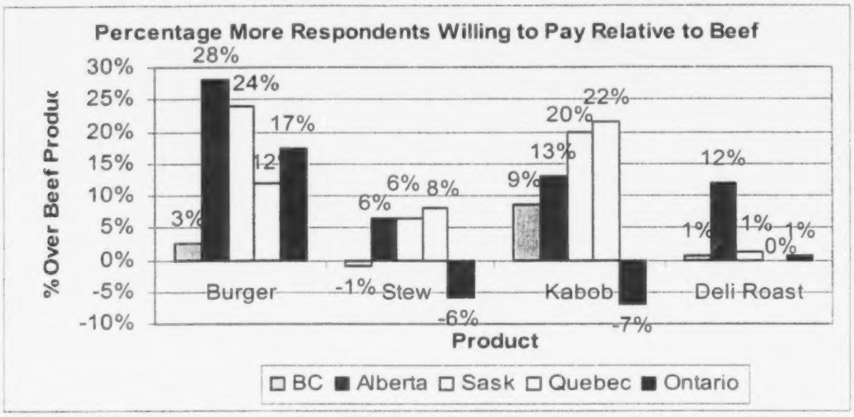

Figure 4.1. - **Stated Willingness-to-pay as a Percentage of Beef Reference Price – Phase 1**

In the second phase of the Bison Marketing Project a stated WTP question with a beef reference price was also posed to consumers. The results are displayed in Table 4.2 and Figure 4.2

Table 4.2. – Comparing Willingness to Pay in Phase 2

Product	Reference Beef Price	Ontario Mean	Ontario St. Dev	Quebec Mean	Quebec St. Dev
Ginger Teriyaki Seasoned Bison Strips	\$5.99/450g	\$5.30	\$2.38		
Roasted Garlic Seasoned Bison Strips	\$5.99/450g	\$4.89	\$2.12	\$7.22	\$1.86
Mesquite BBQ Seasoned Bison Strips	\$5.99/450g	\$5.59	\$2.39		
Bison Garlic Coil	\$4.99/350g	\$4.53	\$1.29	\$5.41	\$1.29

In the Ontario trials every participant had the opportunity to review each product packaging separately, while in Quebec participants were only given one chance to review the packaged product and state their willingness-to-pay. The results show that Quebec participants appear more willing to pay a premium over a similar beef product than were the Ontario participants.

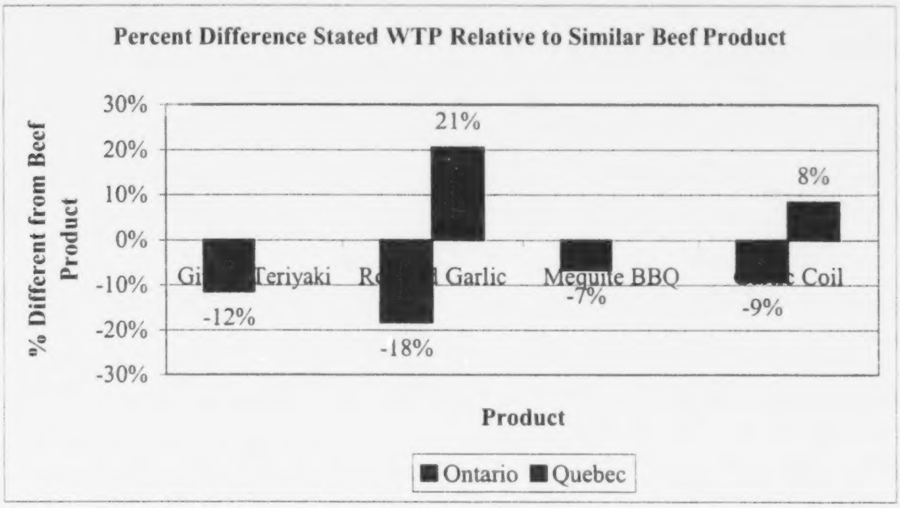

Figure 4.2. - **Stated Willingness to Pay as a Percentage of Beef Reference Price – Phase 2**

Evaluating Willingness to Pay - Phase One Experimental Market

Experimental auctions (laboratory markets) were used in both phases 1 and 2 to gather more information about willingness to pay for bison products. Different formats were used for the experimental auction in each phase so as to gather different types of information. Experimental auctions are designed to elicit more realistic WTP estimates than simply asking respondents to state their WTP (although this was also done as discussed in the section above). The possibility that a participant will have to 'buy' the product at the end of the experiment provides respondents with the incentive to bid honestly – the bidding experiment uses real products and real money.

In phase 1, the laboratory market was conducted to elicit information about consumer WTP for bison meat and for specific meat attributes. At the start of the bidding experiment, each participant was given a beef sandwich containing deli style roast beef similar to the bison deli roast they had just tasted in the product evaluation portion of the study. They were also provided with \$10[11]. They were then given the opportunity to bid to exchange their beef sandwich for one of four different bison sandwiches. All sandwiches were identical to their beef sandwich, with the exception of the meat. Respondents were provided with different information about each bison sandwich.

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[11] The \$10 payment was used so as to keep the initial endowment consistent across all locations and all respondents.

- **Sandwich 1** was a bison meat sandwich with no additional information provided.
- **Sandwich 2** contained bison meat that was verified to be 60% lower in fat than the panelists' beef sandwich[12].
- **Sandwich 3** contained bison meat that was verified to have been produced without the use of growth hormones.
- **Sandwich 4** contained bison meat that we could verify as 60% lower in fat than the beef sandwich and produced without the use of growth hormones.

Participants were given the chance to bid the amount they would be willing to pay to *exchange* their beef sandwich for each of the four bison sandwiches in 10 consecutive rounds of bidding. Bids were written down privately on bid ballots and collected for recording with each round. Positive bids indicate that the individual would prefer to eat the bison sandwich rather than the beef sandwich, negative bids indicate that they would prefer to eat the beef sandwich, and zero bids were appropriate if the individual was indifferent between eating the beef or the bison sandwich. At the end of the ten rounds of bidding, one round and one sandwich were randomly selected by the role of die and the highest bidder for the selected round/sandwich exchanged their beef sandwich for the bison sandwich and paid the 'market price'[13]. All participants were expected to eat their sandwich (which formed part of a lunch or light meal) before leaving.

The laboratory market bidding experiment provides the opportunity to actually see what respondents are willing to pay because if they are the successful bidder they will actually have to pay money for the bison meat sandwich and eat it at the end of the experiment. As the participants are bidding what they would be willing to pay to exchange the sandwiches the laboratory market is revealing the premium (if any) that respondents are willing to pay for each different bison sandwich over beef. By offering four different bison sandwiches with specific attributes of reduced fat content and 'hormone-free' it is possible to estimate consumer willingness-to-pay for these attributes. The premium consumers are willing to pay for these attributes could then be compared to the cost of providing this attribute/information.

The results of the laboratory market for the phase 1 sample are provided in Figure 4.3. The graph presents average bids across each of the 10 rounds. Participants, on average, were willing to pay more for a bison meat sandwich that is 60% lower in fat (Sandwich 2) than for the bison sandwich for which this information could not be verified (Sandwich 1). The bison sandwich that was verified as having been produced without the use of growth hormones (Sandwich 3) also appeared to command a premium on average. Consumers valued the bison sandwich that was 60% lower in fat and produced without the use of growth hormones (Sandwich 4) more than any of the other three bison sandwiches. These results suggest that consumers, on average, are willing to pay more for the attributes of reduced fat content and 'hormone free'. Of course, it would be necessary to determine the cost of providing these attributes (e.g. testing meat for fat content, monitoring for growth hormones, providing information to consumer through advertising and labelling) before the returns to the industry of developing or promoting these could be assessed. It is important to remember that these graphs only show the average bids, whereas there was a wide distribution of bids among consumers, including a large number (27.6%) of zero bids for sandwich One (bison only) This indicates that many consumers were indifferent between bison and beef unless the bison meat offered them something extra. These results assert the need to emphasise and develop the "extra" benefits of bison in order to command a premium in the marketplace.

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[12] The lower fat content had been verified in a previous fat comparison test.

[13] The market price was the 2nd highest bid price. This is known as a Vickery auction.

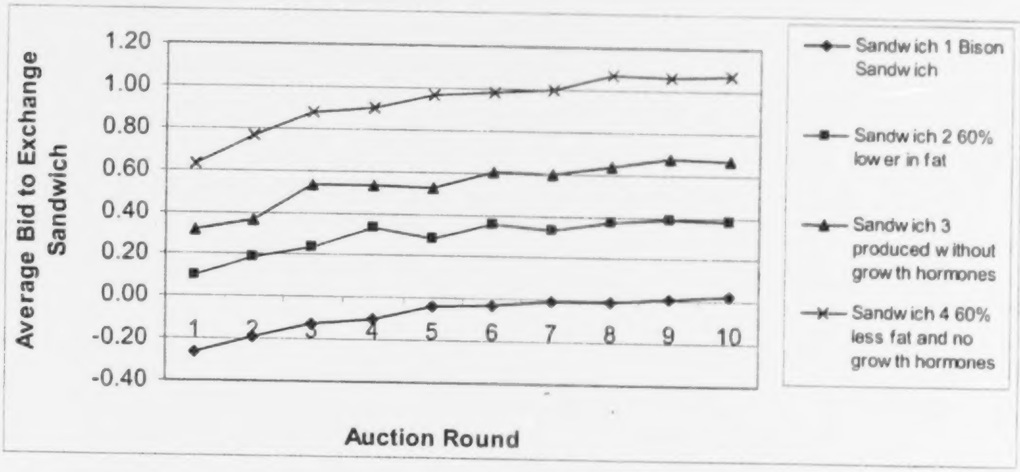

Figure 4.3. - Laboratory Market Bidding Results – Full Sample – Phase 1

Regression analysis was used to evaluate the sample observations. This allows us to see which factors influenced people's bids for the different sandwich. An ordinary least squares (OLS) regression model was run using average bids for the last five rounds of each sandwich auction as the dependent variable. Only the last five rounds were used under the assumption that learning may occur in first few rounds of bidding and these later bids are therefore considered to be more stable in revealing willingness-to-pay (Dickinson and Bailey 2003). Independent (explanatory) variables included average market price of the first five rounds of bidding[14], respondent gender, age, education level, income level, the number of times the person had tried bison, and their overall rating of the deli meat product in the taste test. It was expected that those that had found the deli meat more acceptable in the sensory evaluation would be willing to pay more. Previous experience with bison was also hypothesized to lead to higher bids. We did not have strong prior expectations about the effect of gender, age, education or income on the sandwich bids. Dummy variables were included for sandwich type (bison, bison 60% lower in fat, bison produced without the use of growth hormones, and bison 60% lower in fat and produced without the use of growth hormones), location and cluster membership. Dummy variables allow us to see whether there was a statistically higher bid for each sandwich, between locations and among the five cluster groups identified in section 2.

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[14] At the beginning of each round of bidding, the 'market price' was announced. This was the 2nd highest bid from the previous round and would be the price that the auction winner would pay if that round was randomly selected at the end as the binding round. Announcing the 'market price' acts as a corrective mechanism to assist respondents in understanding the auction process. Including the average market price as an explanatory variable allows us to control for any influence the announced market price may have had on the bidding.

Table 4.3. – **Explanatory Variables Used in Regression**

Independent (Explanatory) Variables	Value Assigned in Regression Equation
Market Price	Avg $ value of market price for rounds 1 to 5 of auction
Gender	Male = 0; Female = 1
Age	Year of Birth
Education	Less than Grade 9 = 1 Completed Grades 9 - 13 = 2 Technical School = 3 College = 4 University = 5
Income	Below $30,000 = 1 Below $60,000 = 2 Below $90,000 = 3 Below $120,000 = 4 Over $120,000 = 5
Tried Bison	Never = 1 1 or 2 Times = 2 3-5 Times = 3 More Than 5 Times = 4
Sensory Rating	Extremely Acceptable = 1 Very Acceptable = 2 Acceptable = 3 Slightly Acceptable = 4 Slightly Unacceptable = 5 Unacceptable = 6 Very Unacceptable = 7 Extremely Unacceptable = 8
Sandwich 1 Bison Only	Base Sandwich Variable value always = 0
Sandwich 2 Lower Fat	When Sandwich 2 = 1; Otherwise = 0
Sandwich 3 No Hormones	When Sandwich 3 = 1; Otherwise = 0
Sandwich 4 Lower Fat/No Hormones	When Sandwich 4 = 1; Otherwise = 0
Saskatoon	Base Location Variable value always = 0
Edmonton	When Edmonton = 1; Otherwise = 0
Vancouver	When Vancouver = 1; Otherwise = 0
Guelph	When Guelph = 1; Otherwise = 0
Quebec	When Quebec = 1; Otherwise = 0
Convenience Cluster 1	When Sandwich 4 = 1; Otherwise = 0
Eating Experience Cluster 2	When Sandwich 4 = 1; Otherwise = 0
Healthy and Novel -Not at Any Price Cluster 3a	When Sandwich 4 = 1; Otherwise = 0
Healthy with Time to Spare Cluster 3b	Base Cluster Variable value always = 0
Have It All at a Reasonable Price Cluster 3c	When Sandwich 4 = 1; Otherwise = 0

The results of this analysis are reported in Table 4.4. Average market price, gender, tried bison, respondent rating of the bison deli meat, BC and cluster 4 referred to as "Have it All at a Reasonable Price" were all statistically significant at the .01 level of significance. Income, bison sandwich produced without the use of growth hormones, and cluster 2 labelled "Eating

Experience" were all statistically significant at the .05 level of significance, while bison sandwich 60% lower in fat and produced without the use of growth hormones are significant at the .10 level of significance. Age, education, bison sandwich 60% lower in fat, cluster 1 and 3, and all locations other than BC were not significant.

Table 4.4. - OLS Regression Results

Variable	Coefficient	P[lZl>z][15]
Market Price	0.636	0
Gender	0.379	0
Age	0.914	0.794
Education	-0.103	0.782
Income	-0.945	0.015
Tried Bison	0.158	0.002
Sensory Rating	-0.594	0
Sandwich Lower Fat (#2)	0.175	0.146
Sandwich No Hormones (#3)	0.243	0.05
Sandwich Lower Fat/No Horm (#4)	0.246	0.073
Alberta	-0.104	0.46
BC	-0.592	0
Ontario	0.67	0.638
Quebec	0.722	0.96
"Convenience" Cluster	-0.276	0.192
"Eating Experience" Cluster	0.421	0.032
"Healthy and Novel" Cluster	0.188	0.392
"Have It All Reasonable Price" Cluster	0.771	0
Constant	0.335	0.32
R-Squared	0.26	

A number of the demographics examined in the study were significant determinants of willingness-to-pay. The sandwich treatment was also significant in determining bids. There appears to be a higher willingness-to-pay amongst women. This may be an indication that women are more responsive to health information than men. Table 4.4 shows that women on average were willing to pay about 38¢ more than men across the four sandwiches. Nayga (1998) found that females were more likely to try low-fat, low-cholesterol foods. As expected those who had tried bison before and the overall rating of the bison deli roast by respondents in the taste test done prior to the auction were both positively correlated with bidding.

Income was negatively correlated with bidding, indicating that higher income individuals bid less than lower income individuals on average. Several explanations are proposed. It is possible that lower income respondents saw the auction as a low cost one-time opportunity to experience bison. These bidders could afford a higher price premium in an isolated purchase situation where the $10 available for the auction was essentially 'free money'. Given the retail premium charged for bison relative to beef, lower income respondents were less likely to have experienced eating the meat and may have wanted to take advantage of the opportunity to try it in the market experiment. However, it should be noted that all respondents had just tried the bison deli meat during the sensory evaluation. Another possibility is that higher income respondents may be exposed to and capable of buying a greater variety of meat products available on the market and therefore less receptive to additional information about bison. Related to this is the possibility that higher income respondents do not place as high a value on red meats, or have the resources to purchase high quality beef cuts preferred to the bison deli roast being offered.

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[15] This tells us the confidence we can have in the estimated coefficient. A small value indicates a higher confidence in the value estimated. A value of less than .01 indicates 99% confidence level or .01 significance level.

Sandwich 1 the 'bison only' sandwich, was the reference category. This means that we can compare the dummy variable coefficients on the other three sandwiches to sandwich 1 to see if there was a statistically significantly higher willingness-to-pay for bison with additional attributes. Willingness-to-pay was statistically higher for the bison sandwich produced without the use of growth hormones and the bison sandwich both 60% lower in fat then the beef sandwich and produced without the use of growth hormones. Table 4.4 indicates that respondents were, on average, willing to pay about 24¢ more to exchange the beef sandwich for the 'naturally produced' bison sandwich than they were for the sandwich that they just knew was bison. For the sandwich with 60% lower fat and no growth hormones, the average premium vis-à-vis the bison only sandwich was about 25¢. A t-test reveals that the average bid for the two sandwiches (no hormones Vs lower fat & no hormones) are statistically different at the .01 significance level. This suggests that respondents valued the combination of the two health attributes more than they valued produced without the use of growth hormones alone.

The statistical significance of these two sandwiches but not the sandwich containing bison 60% lower in fat alone is surprising. A possible explanation is consumer familiarity with lower fat meats relative to meats produced without the use of growth hormones. The widespread promotion of a diet that is lower in fat has created an awareness of the meat alternatives that are lower in fat. Consumers currently have a variety of low fat meat alternatives available on the market at competitive prices. However, with the exception of organic there are few meat alternatives promoted as produced without the use of growth hormones. Even organic meats are not widely available and where available command a considerable price premium over conventionally produced products. The result is that many respondents may not have been familiar with hormone free meats and were interested in trying the product when the cost of doing so was low in this one time situation.

Membership in the five clusters described in section 2 was significant in explaining willingness-to-pay for bison with these specific health attributes for two of the five cluster groups ("Eating experience" and "Have it all at a reasonable price"). The reference cluster group was #3b "Healthy with Time to Spare". Thus, the coefficients for the other four clusters should be interpreted with reference to this cluster. The results suggest that members in the "eating experience" cluster on average were willing to pay about 42¢ more than those in the reference cluster to exchange their beef sandwich for a bison sandwich.

The significance of some of the cluster variables reinforces the importance of market segmentation when developing the supply chain and marketing strategy for a new or differentiated product. Although there was willingness-to-pay more for the health attributes of bison by some respondents, not all were willing to pay a price premium. Those interested in the unique attributes of bison that make it a novel eating experience and those who value the health attributes of lower fat content and production without growth hormones may be willing to pay more for these qualities. Given that there is expected to be high income and substitution elasticity in the specialized meat industry, it will be very important for the industry to focus marketing toward those target market segments that value the differentiated attributes bison can offer and are therefore expected to be less price sensitive.

Evaluating the Effect of Information on Willingness to Pay - Phase Two Experimental Market

The experimental auction in phase 2 of the Bison Marketing Project had a different objective and format than that used for phase 1. The objective was to examine the impact of information on willingness-to-pay (WTP) for a processed bison product. The research for this study was conducted in December 2002 with 57 people from the Ontario sample in phase 2. Six groups of approximately 10 people participated in the bidding experiment. A package of seasoned bison strips was used. It is important to note that the bidding experiment was conducted before the participants took part in the sensory panels. Thus, participants had not yet sampled any of the products. They did not receive any information concerning bison before beginning the bidding experiment and were not given a beef reference price. There was the potential that each participant would have to 'purchase' a package of Seasoned Bison Strips at a bid price at the end of the experiment. Thus, the auction is set up so as to create the incentive for people to bid honestly and not to under or over bid.

The bidding experiment consisted of two separate rounds of bidding. Participants were first allowed to view the package of seasoned bison strips as it was carried around the room. All they were told was that it was a 450g package of Seasoned Bison Strips. Participants were not told what flavour or seasoning type the strips were in, how the product was to be prepared or any other information about the product. They were then asked to write down how much they would be willing to pay for the package of seasoned bison strips, and the written bids were collected by monitors. Once the first round of bidding was completed a second round of "informed" bidding was conducted. Participants were given a set of information about bison and then asked to bid again. Participants were in one of three information treatment groups:

(1) Nutritional information treatment
(2) Taste Testimonial treatment
(3) Natural Aspects treatment

After being given time to read the additional information about bison, a second round of bidding was conducted and written bids were collected by the monitors. At the end of the two rounds, one round of bidding was randomly selected as the binding round. Bids from the round were rank ordered from highest to lowest. The roll of a die was used to determine the cut-off bid (e.g. a 5 for the 5th highest price). All participants bidding higher than the cut-off bid price were expected to purchase a package of seasoned bison strips at the cut-off price. Panelists were aware of the rules before beginning the experiment and thus had the incentive to bid their true willingness-to-pay[16]. The results for the three treatments are provided below. Two groups of respondents received each information treatment.

Nutritional Information Treatment
In the first round of bidding, before they had received any information, the 17 participants in this treatment had an average WTP of $2.981/450g package. Before starting a second round of bidding participants in this category received a colour nutritional comparison chart. The chart compared the iron, fat, cholesterol and caloric content of 100g of cooked lean bison, beef, chicken and pork (see Appendix B). Participants were given some time to review the chart before a second round of bidding commenced. **Bids increased an average of 22.1 cents to $3.201/450g package.**

Taste Testimonial Treatment
In the first round of bidding, before they had received any information, the 20 participants in this category had an average WTP of $2.238/450g package. Before starting a second round of bidding, participants in this category received a testimonial from a chef about the taste of bison. The testimonial came from Chef Peter Phillips who owns his own catering business and restaurant, "Bison is delicious due to its tender, non-greasy taste that's richer and sweeter than beef." Participants were given some time to review the statement before a second round of bidding commenced. In this category **bids increased an average of 21.0 cents to $2.448/450g package.**

Natural Aspects Treatment
In the first round of bidding, before they had received any information, the 20 participants in this category had an average WTP of $3.217 /450g package. Before starting a second round of bidding participants in this category received a statement telling them that, "Growth hormones and sub-therapeutic antibiotics were not used in the production of the bison used to manufacture this product." Participants were given some time to review the statement before a second round of bidding commenced. In this final category **bids increased an average of 18.5 cents to $3.402/450g package.**

Table 4.4. – Information Treatments, Elicited WTP Values and Change

Treatment Type	# of Participants	1st Round Mean	2nd Round Mean	Change (+/-)
Nutritional	17	$2.981	$3.201	+$0.221
Testimonial	20	$2.238	$2.448	+$0.210
"Natural"	20	$3.217	$3.402	+$0.185

An initial statistical test, analysis of variance or Anova can be conducted to determine if the difference in bids between the information treatments is significant. This test of equality examines the relationship between measurements of the mean and the variance of each group to determine if the difference between them is significant. The results of this test are displayed in Table 4.5.

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[16] Before running the bidding experiment with bison, a practice round with a conducted with a chocolate bar so that participants were familiar with the process and understood that it was possible that a 'purchase' would be made.

Table 4.5. - Test for Equality of Means Between Information Treatments
Difference in Bids

Method	df	Value	Probability
Anova F-statistic	(2, 54)	0.032790	0.9678

Analysis of Variance

Source of Variation	df	Sum of Sq.	Mean Sq.
Between	2	0.012609	0.006305
Within	54	10.38299	0.192278
Total	56	10.39560	0.185636

Category Statistics

Variable	Count	Mean	Std. Dev.	Std. Err. of Mean
NUTRITION	17	0.220588	0.482150	0.116938
TASTE	20	0.210000	0.484116	0.108252
NATURAL	20	0.185000	0.341090	0.076270
All	57	0.204386	0.430855	0.057068

The Anova F-statistic shows a probability value of 0.9678. This means that there is no significant difference in the means of the difference in bids between the three information treatments. The probability value is nearly 1, which tells us that the means of the difference in bids of the treatments are basically identical. Therefore, the results of the research demonstrated that willingness-to-pay increased when participants were given relevant information about bison but the increase was not significantly different between the information treatments.

The consumer research in phases 1 and 2 of this project has shown that consumers know little about bison and almost any type of information about bison would be beneficial in increasing awareness of bison products. The primary priority for the bison industry should be to increase the awareness of bison being ranch-raised all over North America and promote the fact that bison are not an endangered species. Then, persuading people to taste bison by using information such as the information treatments used in phase 2 would be a secondary priority for the bison industry. The information to use would be determined by the target audience. For example, if bison is promoted to fitness minded people it may be best to focus on the nutritional characteristics. If promotions are being done in conjunction with a health food store it may be wise to highlight bison production practices that include the absence of growth hormones and antibiotics. In culinary events taste may reign supreme. The problem is not that people are getting misleading information about bison, they are simply not getting any information. That may be why WTP increased in all information treatments but was not significantly different for any specific treatment.

5. IDENTIFYING MARKET SEGMENTS

Willingness to Pay of Specific Segments

Combining the cluster analysis from section 2 with the phase 1 experimental auction results provides some interesting insights into market segmentation and willingness-to-pay. Figure 5.1 shows the average bids for the last 5 rounds of the phase 1 experimental auction for each of the five consumer clusters. The vertical axis shows the average (marginal) bid to exchange a specific bison sandwich for the beef sandwich.

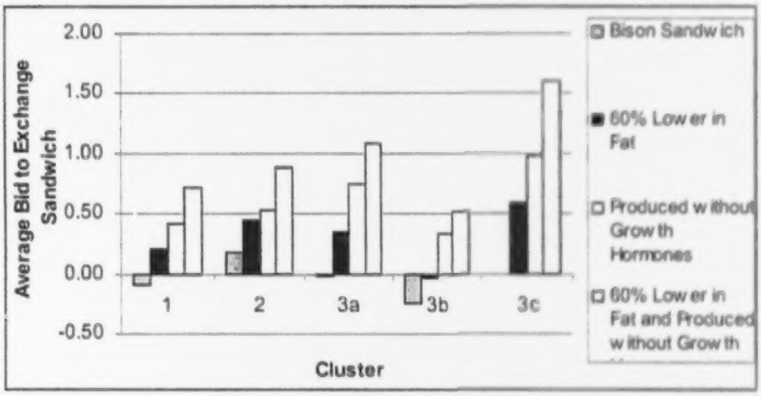

Figure 5.1. - **Average Phase 1 Auction Bids by Cluster Group**[17]

In Figure 5.1, cluster 2 "Eating Experience" has the highest average bid for the bison sandwich when no additional information about the meat is provided. This makes implicit sense as this group was primarily interested in a unique eating experience and rated specialty meat native to North America significantly higher than the entire sample. This group was willing to pay more simply for the experience of having bison as opposed to beef. Clusters 3a "Health and Novel – But Not at Any Price" and 3c "Have it all at a Reasonable Price" offer similar average bids of zero for sandwich 1, suggesting indifference between the beef and bison sandwiches. Both these clusters gave high importance ratings to the health and price attributes as well as unique eating experience. This average bid of zero for sandwich 1 may suggest that a novel eating experience such as bison must also offer other attributes important to these consumers such as lower fat before a price premium will be paid.

Cluster 1 "Convenience" had an average negative bid of -10¢, which may reflect the statistically significant lower rating that this group gave to unique or novel eating experiences and the appeal of a specialty meat native to North America. Sandwich 1 did not offer respondents any sort of purchase or preparation convenience, which was the priority of cluster 1. Cluster 3b "Healthy with Time to Spare" had the lowest average bid for sandwich 1. Cluster 3b was a small group with attribute ratings that were similar to the entire group, with the exception of a significantly lower importance rating for convenience to purchase and prepare. This cluster was a bit of an anomaly and so it is difficult to draw any conclusions from the bids by this group. For such a small group, one or two very low outlier bids may explain the low average.

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[17] Cluster 1: Convenience; Cluster 2 Eating Experience; Cluster 3a Healthy &Novel – But not at any Price; Cluster 3b Healthy with Time to Spare; Cluster 3c Have it All at a Reasonable Price

When the attributes of 60% lower in fat and produced without the use of growth hormones are introduced (sandwiches 2, 3, and 4), cluster 3c offers the highest average bid. This again makes implicit sense as this group overall gave on average higher ratings for all attributes evaluated including fat and cholesterol content, production methods - which would include the use of growth hormones - and an interest in a unique eating experience. For sandwiches 3 and 4 cluster 3a yielded the second highest average bid, reflecting the value placed on fat and cholesterol content, production methods and a unique product. Cluster 3a was also more likely to be price conscious and this may explain bidding lower than cluster 3c for these sandwiches and the fact that the average bid was below cluster 1 for the 60% lower in fat sandwich (#2).

For the bison sandwich verified to have been produced without the use of growth hormones, the difference between cluster 3b and cluster 1 and 2 bids narrows. This represents an interest by group 3b in production methods (no growth hormones) and the bid for this group jumps up from an average negative value for sandwich 2 to 34¢, closer to the average bids for cluster 1 and 2. Although cluster 1 and 2 do offer a higher average bid for sandwich 3, the percentage increase in the average bid over sandwich 2 is smaller than the increase between sandwich 1 and 2. This is consistent with the average attribute rating of the importance of production methods for cluster 1 and 2. Both cluster 1 and 2 rated production methods as statistically less important than did the entire sample. Therefore we see the "gap" between bids for cluster 3b, 1 and 2 narrow for the 'naturally produced' sandwich (#3).

For all clusters it is interesting that the average bid increases as sandwiches with additional information are made available, suggesting that all clusters valued incrementally to some extent the additional attributes of reduced fat content and production without growth hormones. The slope of the line representing the bids for the four sandwiches is the greatest (steepest) for cluster 3a and 3b, reflecting their statistically higher interest in the attributes represented in sandwiches 2, 3 and 4 relative to the other clusters. Cluster 2 has the lowest (flattest) slope reflecting their lower incremental value for the attributes offered in sandwich 2, 3 and 4. For cluster 2 although they are interested in a unique eating experience they are unwilling to offer large price increments for the bison that was lower in fat and/or produced without growth hormones.

Regional Differences

It is interesting to note that Quebec is somewhat under represented in cluster 1, which valued convenience and price over eating experience. Based on the observations of the survey monitors and results of the sensory testing in Quebec it appeared that people in Quebec take a considerable interest in their eating experiences. Feedback from the study suggests that Quebec consumers value the opportunity to experience new, interesting and unique products. This is consistent with the finding that cluster 2, which gave a higher importance rating to the attribute of a unique or novel eating experience at home or in a restaurant, had a high representation of Quebec respondents. Over a third (35%) of respondents in this group were from Quebec. The appeal of a meat product that is native to North America was given the highest average rating by this group, again suggesting that these individuals place a greater importance on the eating experience.

In Saskatchewan and Alberta the sensory results from phase 1 were quite positive, and 73% and 71% of respondents respectively had tried bison before. In British Columbia and Ontario the sensory results for the burger and kabob were less favourable and 31% and 33% of respondents respectively had tried bison before. Comparison of the average attribute ratings show that Saskatchewan and Alberta gave the bison products higher average ratings based on taste, price, special occasion meat and were more likely to eat the products in a restaurant versus home consumption. Alberta and Saskatchewan respondents also perceived bison meat to be healthier relative to other meats than those in British Columbia and Ontario. These results are summarized in Figure 5.2.

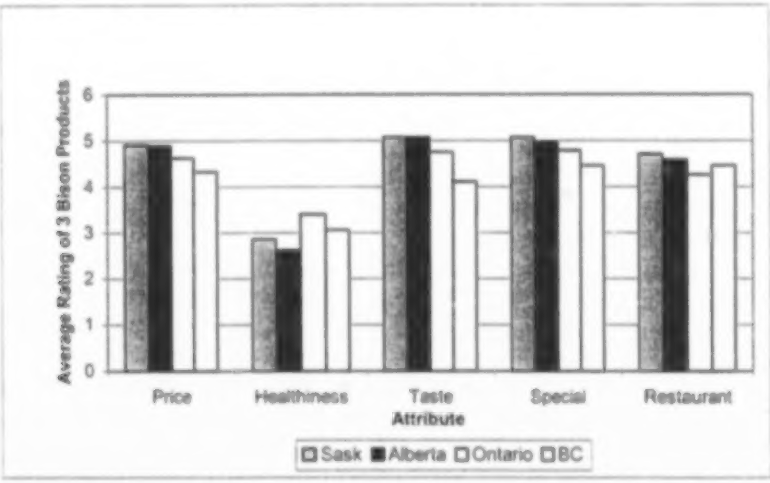

Figure 5.2 - **Comparison of Bison Attribute Ratings**

There may be specific attributes that can be promoted for which a pricing premium over beef would be possible. However these premiums are likely to be small given the strong relationship between bison and beef based on taste and appearance.

Market Segmentation and the Competitive Positioning of Bison

The existence of very distinct market segments with preferences that differ from the rest of the market has important implications for the development of marketing strategies. There are two perspectives or implications that need to be considered. One is that when targeting a market it is important to know the specific attributes that appeal to the market segment and develop products and a marketing strategy that meets the needs of the consumers in that market segment. If we turn this around, another perspective is that in choosing a market to target, the decision should be based on a good understanding of the market segments that exist and the ability of the bison products to meet the consumer expectations within the specific segments identified.

For new products, such as bison where little market information is available about the comparisons consumers make with other products, multidimensional scaling offers useful insights into where bison potentially "fits" in the meat industry. When introducing new products and developing a pricing and marketing strategy it is important to know what products are considered to be close substitutes. Similarity ratings provide some insight into the comparisons that consumers make. Do the physical attributes of bison result in a comparison to beef or does the exotic or novel nature of bison result in a comparison to other high end products such as rack of lamb and lobster tail?

Taste and appearance were the criteria most frequently stated by respondents in all five locations as the basis on which they made the product comparisons or "similarity" ratings. Saskatchewan, Alberta and Ontario respondents perceived beef and bison to be quite similar using these criteria. The relationship between bison and beef was not as strong in BC and Quebec, where participants perceived the taste and appearance of bison and beef to be quite different. With exotic meats expected to have a high elasticity of substitution, the discovery of a close association in some locations with beef based on taste and appearance suggests that a pricing strategy that departed significantly from beef was likely not feasible. When the taste and appearance can be achieved in a lower priced substitute, consumer tolerance for price premiums is likely to be low.

When consumers were asked to consider specific attributes when comparing meat products, the relationship between beef and bison was not as prominent in any of the five locations. Products appear to be positioned based on the type of cut rather than the type of meat (i.e. species). Thus, when consumers are 'forced' to think about products specifically in terms of their price, healthiness and taste, and the eating occasion/location – the products become differentiated on the basis of type of meat cut. The interesting lesson here is that a marketing strategy that emphasises these features can alter consumers' perceptions of the substitutability between products. For all five locations; basing the MDS analysis on the specific factors yields a different spatial relationship in terms of the competitive positioning of bison than the unstructured pairwise comparison.

Industry leaders have anticipated a marketing advantage for bison based on the perceived healthiness of the meat and perceptions that it is an exotic meat. A marketing strategy that builds on the basic similarity between beef and bison in terms of consumer acceptability toward a new product but that goes on to differentiate bison in terms of additional quality characteristics may be appropriate.

Differences in the ratings of bison and beef based on price, healthiness, special occasion and restaurant versus home consumption may be related to how familiar consumers are with the product and whether they liked the products. In a 2-tailed Pearson correlation test the average taste ratings for each location in phase 1 was found to be correlated with ratings for price (.734) and whether the product is a special occasion meat (.750). The correlation was significant at the 99% level.

The results of the MDS mapping based on the similarity ratings and then on the attribute ratings suggest that consumer perceptions changed depending on the factors or criteria being considered.

This has important implications for developing marketing strategies and new products. Consumer perceptions about the similarity of products and which products are close substitutes will be heavily influenced by the particular circumstances under which the product is being purchased and consumed. It is important to know which factors have the greatest influence on the purchase and consumption decision and how these factors influence the consumer's perception of close substitutes. For example most consumers perceived the bison burger to be healthier than a beef burger. Given that bison and beef are perceived to be similar in taste and appearance, and if the "healthiness" of the meat is the primary consideration in the purchase of hamburger, bison may be preferred to beef. A price premium for this preference would require further study but it is anticipated that there may be a health conscious consumer segment that is willing to pay more for bison than beef based on this attribute.

Pearson correlation between the average rating for price and whether the product is perceived to be a special occasion meat revealed a strong relationship between these two ratings (.857) significant at the 99% confidence level. This relationship makes intuitive sense, given that if a meat product is higher in price it is likely to be purchased less frequently and so has a perception of being purchased and consumed only on special occasions. Bison in general was rated as being higher in price than the beef equivalents in most locations and was also thought of as a special occasion meal. It is important to consider this potential "chicken and egg" relationship when developing a marketing strategy. Does the image determine the price or does the price determine the image? It may be naïve to assume that a quality image of bison is responsible for this perception of being a special occasion meat and that this image can be used to command price premiums over products such as beef with which it is compared based on taste and appearance. Choosing to market bison on the image of being a special occasion meat has implications for pricing and supply of product. Price is determined by supply and demand, and until recently the supply of bison for consumption has been relatively low, allowing for higher prices relative to beef. However as supply increases price will continue to fall unless demand increases sufficiently to maintain prices. If this is not possible and price continues to decline, the image of bison being a special occasion meat may disappear.

6. CONCLUSIONS: DEVELOPING A MARKETING STRATEGY

In developing a marketing strategy, the bison industry needs to consider the strategic **placement** of its product in the marketplace relative to competitor products and in terms of supply chain distribution. Future **product development** targeted to specific consumer segments will be necessary. A **promotion** strategy to assist in differentiating bison and informing consumers will be important. Finally, the industry needs to consider the **pricing** of bison relative to competitor products. These four aspects of marketing strategy development are discussed below.

Product Placement

Developing a marketing strategy for a new or differentiated product or industry is a difficult task. A first step to making the decision on where and how to market a product is understanding consumers' perceptual placement of the product relative to the multitude of other purchase choices they have. Although it is possible to influence this perception, attempts to drastically alter the comparisons that consumers make between products are likely to be unsuccessful. For example although there are "gourmet" burgers that have been successfully marketed at a price premium relative to "regular" burgers they do not compete with lobster or pheasant. Placing bison where consumers believe it "fits" and then providing consumers with reasons for choosing it over other product alternatives available on the market is key to gaining consumer acceptance of this new meat product and growing market share.

The research conducted as part of this project has provided the industry with important information on consumer perceptions of bison. Bison is considered to be quite similar to beef in taste and appearance. Given that these are important attributes in the decision to purchase and consume a meat product this will have a significant influence on the marketing of bison meat products. However, for some consumers, perceptions of bison change when the specific attributes of price, healthiness and the eating occasion/location are considered. This offers the industry the opportunity to differentiate their product based on the unique attributes of bison. To obtain a price premium it is important to target marketing towards those consumer segments expected to value the attributes the industry has chosen to promote. The results of the experimental auction in phase 1 suggest that there are specific groups of individuals who value bison for its lower fat content and natural production methods as well as the novel eating experience it offers.

Distribution strategies are also an important part of product placement. The consumer survey from phase 1 showed that lack of availability of bison was the primary reason most people had not tried it before. Willingness to purchase bison is influenced by its availability in stores where consumers frequently shop. While some consumers are likely to go out of their way to find bison, many of those surveyed for this project would be unlikely to do so. Convenience was the primary motivating factor for one of the cluster market segments identified in this research.

Product Choice

The results of the MDS analysis revealed that consumers often perceive similarities between meat products based on the cut. Therefore, particular cuts of meat compete against different groups of products. It is wise to consider different markets for the various cuts of bison and to carefully consider the products being offered within those markets. It is important that any value added product development be consistent with the image being promoted by the industry. For example a "bison stew" product may not be consistent with an image of an exotic, novel eating experience.

In phase 1, respondents in Alberta, Saskatchewan and Québec were more likely to have tried bison than those from BC and Ontario. Familiarity with bison appears to be positively related to the response participants had to the four bison products that they tasted as part of the study. Consumers in Alberta and Saskatchewan in particular responded favourably to the bison samples while those in BC were the least receptive. The kabob received the highest ranking in three of the five locations but this ranking is relative only to the four products tasted (respondents were required to choose a most preferred product from among the kabob, burger, stew and deli roast). The kabob appears to be a promising product for further development. However, product consistency may be harder to achieve in a product such as a kabob. This showed up in the large variations in consumer evaluations of tenderness within the same panel, due perhaps to differences in the size of the meat chunks and/or variations in tenderness across kabobs.

All four products elicit positive responses from at least a subset of respondents and would be worthy of future product development depending on the market of interest and the season anticipated for product launch (e.g. burgers in the summer). Using 'overall acceptability' ratings, it is harder to identify a clear winner among the kabob, burger, stew and deli roast evaluated in phase 1. Clear losers appear to be the burger in BC and the deli roast in Saskatchewan. Again this is perhaps not unexpected given that we were comparing four different products, rather than four versions of the same product – and consumers are heterogeneous so different people are likely to prefer different types of product. The lower acceptability of the stew in Alberta may be due to a product difference and should be interpreted with caution.

It may be possible to enter a number of markets simultaneously if products are developed and exclusively sold within those markets. The practicality of using the entire carcass may dictate which product combinations are feasible and necessary and therefore which markets are the most profitable. Target markets must be carefully matched with the products offered for sale and the image being promoted by the industry.

In the phase 2 consumer panels the Ontario respondents did not favourably review the seasoned bison strips or bison garlic coil and their stated willingness to pay for these bison products on average was not any higher than a comparable beef product. This target market may not be a good choice for these types of product. In Québec, the products were received more favourably and the corresponding WTP was higher than the comparable beef products. For these types of products Québec would appear to be a more favourable target market. Target market choice should be made along with bison information choice to ensure the most effective campaign possible in the target market because consumers have little knowledge of bison.

Promotion

In general, consumer knowledge about bison is limited and to a certain extent inaccurate. Although the majority (71%) of respondents in phase 1 stated they had an overall positive image of the bison industry, 50% of respondents did not disagree with the statement that bison are an endangered species. There is a need to educate the public about the bison industry. Approximately half of respondents did not disagree with statements that bison is tough, wild tasting and dry. Certainly these images may have an influence on consumer willingness to try bison meat and continue purchasing it and should be considered when developing any promotional strategy. When asked why respondents had never purchased bison meat the most frequently cited reasons were that respondents had never seen it for sale (61%) or it was not available where they regularly shopped (52%), while approximately 25% indicated that it was because they were not familiar with how to cook it. This study provides evidence that convenience to purchase is an important consideration when buying meat for home consumption.

The results of the experimental auction in phase 1 suggest that there are specific consumer segments willing to pay a premium for bison meat that is lower in fat and produced without the use of growth hormones. Bison also offers those seeking a unique eating experience a novel alternative. Both the "healthiness" and novel eating experience of bison were offered as possible explanations for the premiums some respondents were willing to pay for bison. With meat supply currently at low volumes relative to commodity meats it may be possible to promote bison as both a "healthy" meat and a "specialty" meat. To maintain the image of "healthy and "novel" it will be necessary for the industry to carefully monitor product development, supply and marketing such that it is consistent with this image.

Differentiating bison from its close substitutes enables the industry to compete on a number of fronts, rather than just on the basis of price. The industry must carefully consider what consumers know about bison and what information they need to know to make the decision to purchase bison meat. Promotion should focus on providing this information and fostering the appropriate image for the bison meat industry.

Research on the impact of information on consumer willingness-to-pay for bison in phase 2 discovered that any relevant information about bison had a positive influence on willingness to pay. This may be due to people having little prior knowledge of bison and demonstrates that educating consumers is the key to promotion. The information provided by the bison industry will shape consumer perception and acceptance of the product.

When providing information to consumers about bison it is important to determine the target market in order to provide the most relevant information to influence that particular market. Since consumers know so little about bison, almost any type of information about bison would be beneficial in increasing awareness about bison products. The primary priority for the bison industry could be to increase the awareness of bison being ranch-raised all over North America and promote the fact that bison are not an endangered species. Then, persuading people to taste bison by using relevant information could be a secondary priority for the bison industry. The information to use would be determined by the target audience. For example, if bison is promoted to fitness minded people it may be best to focus on the nutritional characteristics. If promotions are being done in conjunction with a health food store it may be wise to highlight bison production practices that include the absence of growth hormones and antibiotics. In culinary events taste may reign supreme. The problem is not that people are getting misleading information about bison, they are simply not getting any information about bison.

Given the cost of developing a brand name it is important to know the influence it has on the purchase and consumption decision. Relative to the other purchase and consumption attributes evaluated brand name was not rated as highly and this has important implications for developing a marketing strategy and determining how to spend valuable marketing dollars. However, the attributes associated with a particular brand may be influential and for the bison industry, "bison", would be the brand to promote with relevant information. Several respondents in phase 1 stated that bison sounded "exotic", for them it was a new and unique term, and that "buffalo" reminded them too much of the animal. "Bison" is an opportunity for the bison industry to capitalize on a unique image for their product while educating consumers on its positive attributes.

Pricing

The products, markets and promotional strategy chosen determine pricing. For bison there are a number of factors that will influence price. Consumers consider bison to be similar to beef in taste and appearance. The elasticity of substitution is expected to be high for exotic meats and therefore price premiums relative to beef are likely to be small.

One way to gauge consumer price sensitivity is to gather information on the extent to which consumers compare prices when purchasing a product. Given that bison tends to be sold at a higher price relative to beef, respondents in phase 1 were asked to agree or disagree with the statement that when purchasing a meat product to cook at home they compare prices. An estimated 81% of respondents either agreed or strongly agreed with this statement. Consumers consider themselves to be relatively price conscious when it comes to purchasing meat products. This underscores the importance of evaluating the likely price competitiveness of a new bison product prior to launch.

In phase 1, the sensory evaluation and experimental auction offered the opportunity to gather information on consumer willingness-to-pay for specific bison products. Stated price premiums for the bison burger, kabob, deli roast and stew varied by location and product. Using the average stated willingness-to-pay, the largest premiums over the comparable beef prices are for the burger and kabob. Alberta and Saskatchewan are the highest for the burger at 28% and 24% respectively. For the kabob, Québec respondents said they would pay the highest premium at 22% followed closely by Saskatchewan at 20%. For Ontario the highest stated premium is for the burger at 17%, while for all other products the value is very low or negative. Consistent with the generally negative response of BC to the products, the average premiums on all products are quite low, the highest being the kabob at 9% followed by 3% for the burger. Caution should be used in extrapolating stated willingness to pay information to other situations and other products, however, it is useful as a general guide. Price is determined by product supply and demand. When demand exceeds supply prices will be higher. As supply expands new markets must be found to maintain price premiums relative to beef. The image the industry is promoting must be consistent with pricing.

The phase 2 bidding experiment results demonstrate that relevant information about bison can increase willingness to pay. The Québec taste panel results and the subsequent stated willingness-to-pay indicated that if the product is right and it appeals to consumers, even without additional information, people will consider paying more for bison than beef. Therefore, products developed for a particular target market and backed with relevant information for that target market could enjoy price premiums over similar beef products. The key though is to thoroughly understand the target market and the type of product for which consumers will pay a premium, and then to be able to deliver a reliable supply of a consistent quality product to that market.

The consumer purchase decision is very complex and only when the entire picture is understood and evaluated will it be possible to understand where bison "fits" in the meat industry. Comprehending this "fit" is key to assessing the potential for market and product development. The information gathered in this study is a first step along the road in building that understanding. The bison industry should continue to engage in proactive market research in its target markets as it develops specific products designed for specific consumer segments.

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APPENDIX A:

SURVEY MATERIALS FROM PHASE ONE CONSUMER PANELS

CODE: ____

V5.2

Department of Agricultural Economics

University of Saskatchewan

Consumer Survey

The purpose of this study is to gain a better understanding of consumer attitudes towards bison (North American Buffalo) meat. The data from all completed surveys will be aggregated, analyzed and reported in a manner that does not identify individual participants. **The information we gather will be treated in the strictest of confidence, you will not be asked to identify yourself on the survey.**

QUESTIONNAIRE

Part I:

Below you will note a list of 15 meat products. Take a few minutes to look over the list and think about your perception of these products.

On the following 2 pages, pairs of these products are presented and you are asked to indicate how much the same or different the two products are using the scale provided.

List of Meat Products

Beef burger
Lamb chop
Pork souvlaki
Lobster tail
Breaded chicken burger
Bison kabob
Rack of lamb
Beef striploin steak
Hot dog
Chicken souvlaki
Bison burger
Veal cutlet
Bison Striploin steak
Pork chop
Beef kabob

1) For each of the following product pairs **circle the number** that best represents how similar or different you think the two products are. In the scale below 1 means "Extremely similar" and 6 means "Completely Different".

(For example if you circle a 3 for the first comparison between a beef burger and lamb chop this would tell us that you think the beef burger and lamb chop are "somewhat similar".)

	Extremely Similar 1	*Quite Similar 2*	*Somewhat Similar 3*	*Somewhat Different 4*	*Quite Different 5*	*Completely Different 6*
Veal cutlet & Beef burger	*1*	*2*	*3*	*4*	*5*	*6*
Bison striploin steak & bison burger	*1*	*2*	*3*	*4*	*5*	*6*
Lamb chop & Breaded chicken burger	*1*	*2*	*3*	*4*	*5*	*6*
Bison kabob & Pork suvlaki	*1*	*2*	*3*	*4*	*5*	*6*
Beef burger &Hot dog	*1*	*2*	*3*	*4*	*5*	*6*
Beef striploin steak & Lamb chop	*1*	*2*	*3*	*4*	*5*	*6*
Beef kabob & Veal cutlet	*1*	*2*	*3*	*4*	*5*	*6*
Rack of lamb & Breaded chicken burger	*1*	*2*	*3*	*4*	*5*	*6*
Bison burger & Bison kabob	*1*	*2*	*3*	*4*	*5*	*6*
Beef striploin steak & Pork suvlaki	*1*	*2*	*3*	*4*	*5*	*6*
Bison striploin steak & Veal cutlets	*1*	*2*	*3*	*4*	*5*	*6*
Beef kabob &Chicken suvlaki	*1*	*2*	*3*	*4*	*5*	*6*
Rack of lamb & Bison burger	*1*	*2*	*3*	*4*	*5*	*6*
Pork chop &Lamb chop	*1*	*2*	*3*	*4*	*5*	*6*
Bison kabob & Chicken suvlaki	*1*	*2*	*3*	*4*	*5*	*6*
Beef striploin steak & Breaded chicken burger	*1*	*2*	*3*	*4*	*5*	*6*
Beef kabob & Beef burger	*1*	*2*	*3*	*4*	*5*	*6*
Lobster tail & Veal cutlet	*1*	*2*	*3*	*4*	*5*	*6*
Hot dog & Pork chop	*1*	*2*	*3*	*4*	*5*	*6*
Pork suvlaki & Bison burger	*1*	*2*	*3*	*4*	*5*	*6*
Beef striploin steak & Rack of lamb	*1*	*2*	*3*	*4*	*5*	*6*
Breaded chicken burger & Beef kabob	*1*	*2*	*3*	*4*	*5*	*6*
Lamb chop & Bison kabob	*1*	*2*	*3*	*4*	*5*	*6*
Beef burger & Breaded chicken burger	*1*	*2*	*3*	*4*	*5*	*6*
Chicken suvlaki & Bison striploin steak	*1*	*2*	*3*	*4*	*5*	*6*
Lobster tail & Pork chop	*1*	*2*	*3*	*4*	*5*	*6*
Beef kabob & Rack of lamb	*1*	*2*	*3*	*4*	*5*	*6*
Veal cutlet & Lamb chop	*1*	*2*	*3*	*4*	*5*	*6*
Beef striploin steak & Chicken suvlaki	*1*	*2*	*3*	*4*	*5*	*6*
Bison burger & Hot dog	*1*	*2*	*3*	*4*	*5*	*6*

Lamb chop & Bison striploin steak	*1*	*2*	*3*	*4*	*5*	*6*
Pork chop &Bison kabob	*1*	*2*	*3*	*4*	*5*	*6*
Pork chop & Bison striploin steak	*1*	*2*	*3*	*4*	*5*	*6*
Beef burger & Rack of lamb	*1*	*2*	*3*	*4*	*5*	*6*
Beef kabob & Lamb chop	*1*	*2*	*3*	*4*	*5*	*6*
Bison striploin steak & Hot dog	*1*	*2*	*3*	*4*	*5*	*6*
Chicken suvlaki & Veal cutlet	*1*	*2*	*3*	*4*	*5*	*6*
Bison burger & Pork chop	*1*	*2*	*3*	*4*	*5*	*6*
Breaded chicken burger & Pork suvlaki	*1*	*2*	*3*	*4*	*5*	*6*
Beef burger & Beef striploin steak	*1*	*2*	*3*	*4*	*5*	*6*
Rack of lamb & Lobster tail	*1*	*2*	*3*	*4*	*5*	*6*
Beef kabob & Bison kabob	*1*	*2*	*3*	*4*	*5*	*6*

We would like to understand what criteria people use to evaluate or compare meat products. Thinking about the task you have just completed, please list the criteria you used to determine the similarity of the meat products (e.g. price, color, taste, appearance)

Part II:

2) In this section we would like you to tell us to what extent you agree or disagree with the following statements.

Please consider the entire range of each scale in making your rating. **Circle the number** that best reflects how you feel about the statement.

	Strongly Agree *1*	***Agree*** *2*	***Neither Agree nor Disagree*** *3*	***Disagree*** *4*	***Strongly Disagree*** *5*
a) Nutritional content (vitamins, protein, etc.) are important to me when purchasing a meat product	*1*	*2*	*3*	*4*	*5*
b) When buying a meat product to cook at home, I am much more likely to buy it if it is available where I regularly buy my groceries.	*1*	*2*	*3*	*4*	*5*
c) Fat and cholesterol content are important to me when purchasing a meat product	*1*	*2*	*3*	*4*	*5*
d) When I'm buying a meat product to cook at home, the brand name is important to me.	*1*	*2*	*3*	*4*	*5*
e) When I'm buying a meat product to cook at home, it is important that it be quick and easy to prepare.	*1*	*2*	*3*	*4*	*5*
f) When I buy a meat product to cook at home, I compare the prices of meat products.	*1*	*2*	*3*	*4*	*5*
g) When I buy a meat product to cook at home I look for meat products that will be a novel (unusual or unique) eating experience for me or my family	*1*	*2*	*3*	*4*	*5*
h) When I buy a meat product in a restaurant, I frequently look for meat products that will be a novel (unusual or unique) eating experience.	*1*	*2*	*3*	*4*	*5*
i) The production methods used to produce the meat product (e.g. organic, natural production methods, humane treatment of animals) are important to me when I'm buying a meat product	*1*	*2*	*3*	*4*	*5*

Part III: Now we would like your opinion on different aspects of these meat products.

3.1) How do you think the price of these products usually compares to other meat products on a scale of 1 to 7? Where 1= extremely low in price **relative to other meat products** and 7= extremely high in **price relative to other meat products**. **Circle the number** that best represents what you think about this meat product. **Please circle one number per line.**

	Very Low in Price	*Somewhat Lower in Price 2*	*Slightly Lower in Price*	*About the Same 4*	*Slightly Higher in Price*	*Somewhat Higher in Price 6*	*Very High in Price*
Beef striploin steak	1	2	3	4	5	6	7
Hot dog	1	2	3	4	5	6	7
Chicken souvlaki	1	2	3	4	5	6	7
Bison burger	1	2	3	4	5	6	7
Rack of lamb	1	2	3	4	5	6	7
Pork chop	1	2	3	4	5	6	7
Bison striploin steak	1	2	3	4	5	6	7
Beef kabob	1	2	3	4	5	6	7
Pork souvlaki	1	2	3	4	5	6	7
Veal cutlets	1	2	3	4	5	6	7
Beef burger	1	2	3	4	5	6	7
Breaded chicken	1	2	3	4	5	6	7
Bison kabob	1	2	3	4	5	6	7
Lobster tail	1	2	3	4	5	6	7
Lamb chop	1	2	3	4	5	6	7

3.2) How "healthy" or "unhealthy" do you think each meat product is **compared to other meat products**. Where 1= very healthy and 6= very unhealthy. **Circle the number** that best represents how you think about this meat product. **Please circle one number per line.**

	Very Healthy 1	*Somewhat Healthy 2*	*Slightly Healthy 3*	*About The Same 4*	*Slightly Unhealthy 5*	*Somewhat Unhealthy 6*	*Very Unhealthy 7*
Beef striploin steak	1	2	3	4	5	6	7
Hot dog	1	2	3	4	5	6	7
Chicken souvlaki	1	2	3	4	5	6	7
Bison burger	1	2	3	4	5	6	7
Rack of lamb	1	2	3	4	5	6	7
Pork chop	1	2	3	4	5	6	7
Bison striploin steak	1	2	3	4	5	6	7
Beef kabob	1	2	3	4	5	6	7
Pork souvlaki	1	2	3	4	5	6	7
Veal cutlets	1	2	3	4	5	6	7
Beef burger	1	2	3	4	5	6	7
Breaded chicken	1	2	3	4	5	6	7
Bison kabob	1	2	3	4	5	6	7
Lobster tail	1	2	3	4	5	6	7
Lamb chop	1	2	3	4	5	6	7

3.3) What do you think about the taste of each meat product on a scale from 1 to 7? Where 1= unpleasant tasting and 7= good tasting. **Circle the number** that best represents what you think about the taste of this meat product. **Please circle one number per line.**

	Extremely Unpleasant Taste	*Unpleasant Taste 2*	*OK Taste 3*	*No Opinion*	*Quite Tasty 5*	*Very Tasty*	*Delicious 7*
Beef striploin steak	1	2	3	4	5	6	7
Hot dog	1	2	3	4	5	6	7
Chicken souvlaki	1	2	3	4	5	6	7
Bison burger	1	2	3	4	5	6	7
Rack of lamb	1	2	3	4	5	6	7
Pork chop	1	2	3	4	5	6	7
Bison striploin steak	1	2	3	4	5	6	7
Beef kabob	1	2	3	4	5	6	7
Pork souvlaki	1	2	3	4	5	6	7
Veal cutlets	1	2	3	4	5	6	7
Beef burger	1	2	3	4	5	6	7
Breaded chicken	1	2	3	4	5	6	7
Bison kabob	1	2	3	4	5	6	7
Lobster tail	1	2	3	4	5	6	7
Lamb chop	1	2	3	4	5	6	7

3.4) Thinking about each meat product, do you consider it to be a regular, everyday eating experience or a unique, special occasion eating experience on a scale from 1 to 7? Where1= very ordinary or everyday eating experience and 7= very special or unique eating experience. **Circle the number** that best represents what you think about this meat product. **Please circle one number per line.**

	Very Ordinary Meal 1	*Somewhat Ordinary Meal 2*	*Slightly Ordinary Meal*	*No opinion 4*	*Slightly Special Meal 5*	*Somewhat Special Meal 6*	*Very Special Meal 7*
Beef striploin steak	1	2	3	4	5	6	7
Hot dog	1	2	3	4	5	6	7
Chicken souvlaki	1	2	3	4	5	6	7
Bison burger	1	2	3	4	5	6	7
Rack of lamb	1	2	3	4	5	6	7
Pork chop	1	2	3	4	5	6	7
Bison striploin steak	1	2	3	4	5	6	7
Beef kabob	1	2	3	4	5	6	7
Pork souvlaki	1	2	3	4	5	6	7
Veal cutlets	1	2	3	4	5	6	7
Beef burger	1	2	3	4	5	6	7
Breaded chicken	1	2	3	4	5	6	7
Bison kabob	1	2	3	4	5	6	7
Lobster tail	1	2	3	4	5	6	7
Lamb chop	1	2	3	4	5	6	7

3.5) There may be certain meat products that you would tend to cook and eat at home while others you would tend to eat in a restaurant. When you think about each of these types of meat products please indicate whether you would tend to eat it at home or in a restaurant on a scale from 1 to 7. Where1= if I eat this product, I would only ever eat it at home and 7= I would only ever eat it in a restaurant. **Circle the number** that best represents how you think of this meat product. **Please circle one number per line.**

	Would only ever eat at Home 1	***Usually Eat at Home 2***	***More likely to Eat at Hom***	***Equally Likely to Eat at Home or in a Restaurant 4***	***More likely to Eat at a Restaurant***	***Usually Eat at a Restauran t***	***Would only ever eat at a Restaurant 7***
Beef striploin steak	1	2	3	4	5	6	7
Hot dog	1	2	3	4	5	6	7
Chicken souvlaki	1	2	3	4	5	6	7
Bison burger	1	2	3	4	5	6	7
Rack of lamb	1	2	3	4	5	6	7
Pork chop	1	2	3	4	5	6	7
Bison striploin steak	1	2	3	4	5	6	7
Beef kabob	1	2	3	4	5	6	7
Pork souvlaki	1	2	3	4	5	6	7
Veal cutlets	1	2	3	4	5	6	7
Beef burger	1	2	3	4	5	6	7
Breaded chicken	1	2	3	4	5	6	7
Bison kabob	1	2	3	4	5	6	7
Lobster tail	1	2	3	4	5	6	7
Lamb chop	1	2	3	4	5	6	7

Part IV:

Below we have listed the meat products. Please indicate the top 4 you would prefer to eat. Write a 1 beside the product you like the best, 2 beside the product you like second best and 3 and 4 beside the products you would rate third and fourth. Circle the product you least prefer.

List of Meat Products

___ *Beef burger*
___ *Lamb chop*
___ *Pork souvlaki*
___ *Lobster tail*
___ *Breaded chicken burger*
___ *Bison kabob*
___ *Rack of lamb*
___ *Beef striploin steak*
___ *Hot dog*
___ *Chicken souvlaki*
___ *Bison burger*
___ *Veal cutlet*
___ *Bison Striploin steak*
___ *Pork chop*
___ *Beef kabob*

1. THE FOLLOWING IS A LIST OF STATEMENTS ABOUT BISON. PLEASE INDICATE YOUR RESPONSE TO EACH STATEMENT BY PLACING A CHECK MARK IN THE APPROPRIATE COLUMN OR BOX.

STATEMENT	Agree	Disagree	Neither Agree nor Disagree
a) Bison meat is healthy for you			
b) Bison meat is a special occasion meat			
c) Bison meat has a wild meat or "gamey" taste			
d) Bison meat is tough			
e) Bison meat is dry			
f) Bison is an endangered species			
g) Bison is a unique, heritage meat			

h) Would you be more likely to buy a bison/buffalo meat product if it were labeled

- ☐ **Bison**
- ☐ **Buffalo**
- ☐ **Makes no difference**

i) After tasting bison today, I thought it was

- ☐ **Better than expected**
- ☐ **Not as good as I had expected**
- ☐ **About what I had expected**

If you thought bison was better or worse after trying it, please tell us why.

j) My overall image of bison is

- ☐ **Positive**
- ☐ **Negative**
- ☐ **Neutral (neither positive nor negative)**

j) If you have any other "images" or beliefs about bison, bison meat or the industry, please provide them on the lines below.

2. HOW OFTEN DO YOU EAT A MAIN MEAL OF THE DAY AT HOME THAT YOU CONSIDER TO BE A "QUICK" MEAL (MEANING IT IS PREPARED AND COOKED WITHIN 20-25 MINUTES)?

___Times per week (provide a number)
or ___Times per month (provide a number)
or ___ Rarely (check)

3. IN GENERAL, WHERE ARE YOU MOST LIKELY TO TRY A NEW MEAT PRODUCT?
(Please tick all that apply)

	Tick
At home	
In a restaurant	
In a fast food restaurant	
In a deli or sandwich shop	
At a concession stand in a rink or sporting stadium	
At someone else's home	
In a store (sampling)	
Other please specify	

4. WHERE ARE YOU MOST LIKELY TO PURCHASE A SPECIALTY MEAT OR NEW MEAT PRODUCT FOR HOME CONSUMPTION? (tick only one answer)

	Tick
At the grocery store	
At a specialty meat store	
At a butcher shop	
Other	
Please specify	

5. HOW MANY TIMES HAVE YOU TRIED BISON MEAT (DO NOT INCLUDE SAMPLING WITH THIS SURVEY WHEN ANSWERING THIS QUESTION)? (Please tick only one answer)

Never	
Once or twice	
3 to 5 times	
More than 5 times	

6. IF YOU HAVE NEVER PURCHASED BISON PLEASE INDICATE THE REASON (S).
(Please tick all that apply)

	Tick
Not usually available where I regularly shop	
Price	
Not familiar with how to cook it	
Have never seen bison meat for sale (do not know where to	
Believe bison are an endangered species	
Bison does not appeal to me as a meat	
Other please specify	

The following information helps us determine broad trends. All information will be kept strictly confidential and will be used in aggregate not at the individual level.

7. HOW MANY PEOPLE ARE IN YOUR HOUSEHOLD? ____ (Please provide the number including yourself)

8. WHAT YEAR WERE YOU BORN IN? 19___

9. WOULD YOU SAY YOU HAVE A CERTAIN ETHNIC BACKGROUND? No___
IF YES, WHAT IS YOUR ETHNIC BACKGROUND? ______________________

10. YOUR GENDER ☐ Male ☐ Female

11. DO YOU OR ANYONE IN YOUR HOUSEHOLD CONSUME MEAT THAT IS LOWER IN FAT OR CHOLESTEROL FOR A HEALTH-RELATED REASON? Yes ☐ No ☐

12. WHAT IS THE LEVEL OF EDUCATION YOU HAVE ATTAINED? (Please tick only one answer)

Less than grade 9	
Grade 9 -13	
Technical School	
College Diploma	
University Degree	

13. WHAT IS YOUR ANNUAL (GROSS) FAMILY INCOME? (Please tick the appropriate box)

Below $30,000	
Below $60,000	
Below $90,000	
Below $120,000	
Over $120,000	

Thank you for completing the survey. We will now ask you to take part in the final part of our consumer research process, which is a decision-making experiment. Please wait and a staff member will explain what we are going to do next.

EXPERIMENTAL AUCTION
BIDDING INSTRUCTIONS

Please read and follow the instructions provided here carefully. Do not hesitate to ask any questions about this process since the success of this session is dependent on you understanding what it is that you are to do. If we have not made it clear please just ask.

You will begin this session with a beef sandwich and $10. This beef sandwich belongs to you. It is your meal. The $10 belongs to you. Through the bidding process, you will have the opportunity to bid on paying to exchange your beef sandwich for a bison sandwich. There are four different bison sandwiches. Each bison sandwich is identical to your beef sandwich in every way, except for the meat.

You will be bidding on each of these four bison sandwiches in 10 separate rounds of bidding. At the end of the session, only one of the sandwiches will be auctioned off. This sandwich will be chosen randomly. One of the 10 rounds of bidding will also be chosen randomly. Then, the highest bidder on the randomly selected round will pay to exchange his or her beef sandwich for the bison sandwich. At the end of the session you will eat your beef sandwich or if you are the highest bidder in the randomly selected round, you will eat a bison sandwich as part of your meal.

Bidding in this session involves determining how much you would be willing to pay to trade your current beef sandwich for each bison sandwich. In other words, we want you to think about how much more or less you would be willing to pay for each bison sandwich compared to the beef sandwich that you already have.

- Bidding will occur in 10 separate rounds.
- You can bid a positive amount if you would prefer to eat the bison sandwich rather than the beef sandwich. You can bid zero if you are indifferent between your current sandwich and the bison sandwich, i.e. this means that you really don't mind which sandwich you eat. You can bid a negative amount if you prefer your current beef sandwich to the bison sandwich.
- Bids can be any amount and as small as one cent.
- At the end of each round, the second highest bid will be announced, we will call this the "market price". This would be the price that the highest bidder in that round would have to pay to exchange their beef sandwich for the bison sandwich.
- Only one of the rounds of bidding will be binding and this will be determined by a random draw. So for example, if the 5th round of bidding is drawn randomly as the binding round for a particular bison sandwich and you have the highest bid for that sandwich in the 5th round, this means that you will buy the bison sandwich at the market price for the 5th round. The 'market price' is the second highest bid, not the price you bid. You will exchange your beef sandwich for the bison sandwich and pay us the market price.
- You should bid the highest amount you would be willing to pay to trade your beef sandwich for the bison sandwich. This amount can be positive, negative or zero. The amount you bid should be the **additional amount** you would pay to exchange your beef sandwich for the bison sandwich (not the total amount you think the bison sandwich is worth). Remember, we'll be collecting the money from the highest bidder of the randomly chosen round at the end of the session, so its important that your bids are really what you would pay to trade your beef sandwich for the bison sandwich!

At the beginning of each round, the market price from the previous round will be announced before the next round of bidding begins. Bids are private information and you are asked not to share your bids with other participants, nor should you attempt to discover the bids of any of the other participants in the session.

There are four bison sandwiches. We can verify certain information about each sandwich. We cannot verify this information about the other sandwiches or about the beef sandwich. No deceit is being used in claiming that the products have the specified features.

Sandwich 1:
Sandwich 1 is a bison sandwich.

Sandwich 2:
Sandwich 2 is a bison sandwich that we know is 60% lower in fat than your beef sandwich.

Sandwich 3:
Sandwich 3 is a bison sandwich. We know that the bison meat in this sandwich was 'naturally produced' without the use of growth hormones.

Sandwich 4

Sandwich 4 is a bison sandwich that we know is 60% lower in fat than your beef sandwich and was 'naturally produced' without the use of growth hormones.

In addition to the money you were given for your participation today, the amount of money you take home will be the $10 you have just been given, minus the value of anything purchased in the session and you **must eat your sandwich before you can leave today.**

APPENDIX B:

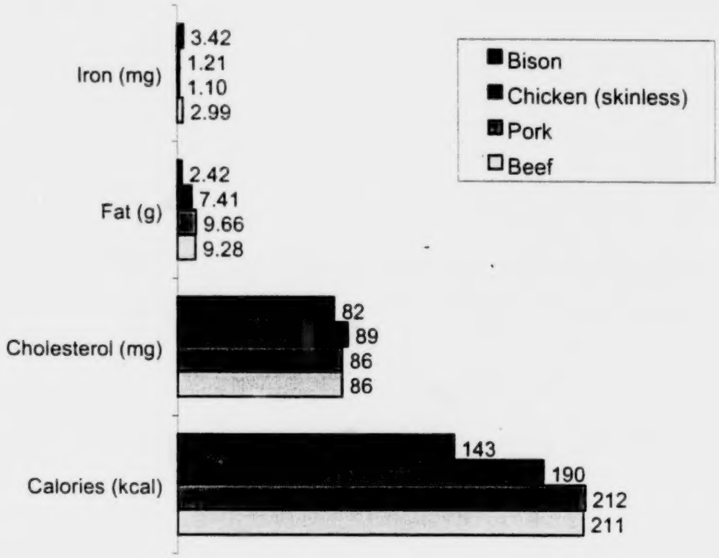
SURVEY MATERIALS FROM PHASE 2 CONSUMER PANELS

BIDDING EXERCISE TREATMENT GROUPS

Treatment #1: Nutritional Comparison

Nutritional Comparison of Four Meats

Based upon 100g of cooked lean meat.



Nutrition information from the USDA Nutrient Database for Standard Reference, Release 15 (August 2002, http://www.nal.usda.gov/fnic/foodcomp/).

Treatment #2: Taste Testimonial

Bison is delicious due to its tender, non-greasy taste that's richer and sweeter than beef.

Chef Peter Phillips

Chef Peter Phillips is a former member of Culinary Team Canada who owns and operates a restaurant/catering business in Saskatoon.

Treatment #3: Natural Aspects

Growth hormones and sub-therapeutic antibiotics were not used in the production of the bison used to manufacture this product.

Department of Agricultural Economics
University of Saskatchewan

Please answer all questions below. The information will be treated in the strictest of confidence, you will not be asked to identify yourself on the survey.

Please check only one box for each question.

1. Have you ever tasted bison before?(not including today)

☐ Never
☐ Once or twice
☐ 3 to 5 times
☐ *Over 5 times*
☐ ***Eat bison regularly***

2. On average, how many days per week do you engage in a planned exercise program?

☐ 3 or more days per week
☐ Less than 3 days per week
☐ No regular program

3. On average, how many **evening meals** are prepared in your home per week?

☐ 5 or more meals
☐ 2 to 4 meals
☐ **Less than 2 meals**

4. How much time is usually spent preparing and cooking an evening meal?

☐ More than 1 hour
☐ ½ to 1 hour
☐ Less than ½ hour

5. Have you ever purchased certified organic or "natural" meat products?

☐ **Never** ☐ **Once or twice** ☐ **Several times** ☐ **Regularly**

6. Do you have any health-related problems that would motivate you to purchase lean meat products? Yes ☐ No ☐

7. In the bidding exercise, did you believe that the successful bidders would really have to purchase a package of bison stir-fry? Yes ☐ No ☐

8. Why or why not? ______________________________

____

9. Was the information provided about bison during the bidding exercise believable?
Yes ☐ No ☐

10. Why or why not?

____

____

____

11. To what extent do you agree or disagree with this statement – "Bison are an endangered species".

☐ Agree ☐ Disagree ☐ Don't Know

12. Before today, how much did you know about the nutritional characteristics of bison meat?

☐ Very Familiar ☐ Somewhat Familiar ☐ Not Familiar

13. Before today, how much did you know about the use of growth hormones and antibiotics in the production of bison?

☐ Very Familiar ☐ Somewhat Familiar ☐ Not Familiar

Answers to the following questions help us determine broad trends. The information will be kept strictly confidential and only used in aggregate, not on the individual level.

14. Gender ☐ Male ☐ Female

15. Age

☐ Under 20
☐ 20-29 years
☐ 30-39 years
☐ 40-49 years
☐ 50-59 years
☐ Over 60

16. Education

☐ Less than Grade 9
☐ Grade 9 to 13
☐ High School Graduate
☐ Technical School
☐ College Diploma
☐ Bachelor's Degree
☐ Master's Degree
☐ Doctorate

17. Ethnic Background

☐ ***British Isles***
☐ French
☐ European
☐ Canadian
☐ ***First Nation***
☐ Caribbean
☐ ***Asian***
☐ Arab
☐ African
☐ Central/South American
☐ ***Other***

18. Household Size

☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6 or more

19. Annual Gross (before tax) Household Income

☐ Under $20,000
☐ $20,000-39,000
☐ $40,000-59,000
☐ $60,000-79,000
☐ $80,000-99,000
☐ $100,000-119,000
☐ $120,000-139,000
☐ $139,000-169,000
☐ $170,000-199,000
☐ Over $200,000

20. Do you have any additional comment (optional)____________________

____

____

____

____

Thank you for participating.

Marketing of Bison Products

Report prepared for the Saskatchewan Bison Association

By P.Wilkins and Associates

November 2003

Initial Focusing of Product possibilities

The concept for this project was to utilize the lower value meat portions and meat trim product from bison. Quantities of both types of these products were being stored in increasing quantities in frozen states. Initial work carried out at the University of Saskatchewan resulted in the development of a number of products from the lower value muscle groups and the trim, namely

1) bison burger,
2) bison kebab,
3) bison meat roll
4) bison stew.

These products had been used in taste trials and evaluation for market acceptance trials. In addition, trim from bison had been used in the development of a garlic coil product. An agreement was made to determine this marketing potential (Appendix 1).

In order to set up workable parameters from which to develop a market focus, surveys were made of a number of retail outlets in Saskatoon, Vancouver, Toronto and Montreal. These surveys obtained data on the types of meat products available in fresh, chilled and frozen forms. All meat product types, beef, pork, chicken and exotic species were examined. I t was found that a variety of formed meat products were available. Largest of these groups were burgers, ranging from bulk packs to the more specialized type such as a steak burger. An emerging market was observed which included pork and chicken skewers fillet mignons and organic products, made from organically raised meat products.

A number of companies were contacted for an initial assessment of the level of interest in a bison product that had undergone secondary processing, other than the basic uncooked meat products. Contacts were made with a number of retail, wholesale and restaurant outlets as well as a number of consultants.

These contacts are listed below:

1) Normand's restaurant – Edmonton Alberta
2) Metro Richlieu – Montreal
3) Provigo- Montreal
4) Hills Bros. – Vancouver
5) Prairie Meats – Saskatoon
6) Westfair foods – Saskatoon
7) Mitchell's Gourmet Foods – Saskatoon
8) Heritage Meats – Vancouver
9) Exotic Meats of Montreal – Montreal
10) T. Lauzon – Montreal
11) M. van der Merwe - Consultant - South Africa
12) D. Braun – Consultant - Canada
13) Royal Ashburn Golf Club – Toronto
14) Alberta Bison Centre of Excellence
15) Alberta Elk industry - marketing representatives

A summary of their comments is given in Appendix 2,

Within the markets, there was an obvious trend towards portion sized rapid preparation selections. Examples of these products were marinated pork and chicken (chilled and frozen), flavor choices for burgers of all meat types, flavored and/or prepared portions of chicken, pork and beef (teriyaki chicken breasts, cordon bleu steaks, pork kebabs). Further, there was an obvious high-end market for organic products, highlighted by the use of white and green packaging for visual and concept identification.

All of the frozen products had the common elements of
1) ease of preparation,
2) speed of cooking and
3) portion control.

All these attributes are aimed to cater to the faster paced lifestyle of today. These cater to the inherent desire of the purchaser to have the element of choice with the addition of other elements to the meal and the method of cooking. A strong element of consumer preference which was also recognized was that of the purchasers wish to have easy of preparation tied with the ability, is desired, to use the base material in novel ways of their own choosing.

It was felt that in order to maximize the potential for value addition and allow for the processing to include a marinade step would be preferred. Marinating is the process whereby moisture is added to the meat product during process, together with other natural elements, resulting in a tenderization of the meat. In this way, the meat would be tenderized and the resultant sauce, flavored and able to be thickened if required, would be part of the product.

Development of products

The Department of Agricultural Economics group under the direction of Prof. Jill Hobbs, in conjunction with the Saskatchewan Food Product Innovation Program group led by Paul Rogers carried out initial work. This collaboration resulted in the development of products for sensory evaluation and market focus trials. These products were:

1) Bison Kebab,
2) Bison meat roll,
3) Bison Burger
4) Bison stew.

In addition, work had progress under a separate project with the Saskatchewan Bison association for the development of a Bison Garlic coil. This coil product was developed specifically to utilize the trim resulting from the cutting process when roasts, steaks and other whole muscle cuts are taken from the whole slaughter carcass

The 4 bison products developed for the market focus trials were submitted to taste panels in Ontario, Quebec, Alberta, Saskatchewan and British Columbia. Details of the results are reported in the main body of the AFIF report of which this document forms a part.

As a result of these trials and the perceived attributes desired by consumers in my initial survey, it was felt that detailed market trials should be conducted in the areas of marinated bison strips and a garlic coil. Representatives of the Saskatchewan Bison Association, the University of Saskatchewan, and the Saskatchewan Food Industry Development Centre Inc. as well as Paul Rogers group discussed these recommendations within the working group. The decision was approved to proceed with marinated products as well as the garlic coil product.

Working with the Saskatchewan Food Product Innovation Program group, (Paul Rogers), a number of marinated products were developed. As a result of these trials, it was decided that a bison strip, cross cut against the grain, subjected to marinating, provided the most consistently tender product when cooked rapidly. The levels of moisture inclusion, in the marinate, as well as by providing moisture for a sauce, optimized the value addition for such a product.

The garlic coil was selected as the most likely vehicle for using the trim. By emphasizing the natural bison content, to the extent of using artificial casing rather than a cross species casing, the product would be marketed with an exclusively natural and healthy perception. This in turn would allow for a higher margin for the product when compared with other similar products on the retail shelves.

Initial samples of these products were produced in trial quantities and were presented to the public at Agribition in November 2002. Samples of the pre-cooked garlic coil were given to the public as well as small samples of marinated strips that had been cooked in an electric frying pan.

Comments from the public over the 2 days when the samples were provided were, with two exceptions, positive. Over 60 kg of product were sampled and sold. In addition several lunchtime bison meals available to the public for purchase, were based on the strips cooked and served over noodles, again with very positive feedback. Feedback was also requested in a simple questionnaire (Appendix 3).

Development of market concept

Discussions with various shareholders in the bison markets and industry as well as with associates led to the following conceptual points when promoting the products:

1) Strong visual presentation of the bison
2) Strong association with natural and organic nature of bison
3) Positive health and nutritional image of bison
4) Portion pack concept (one meal per unit).
5) Rapid and easy preparation
6) High quality presentation for shelf appeal
7) Competitive positioning within the frozen packaged meat market
8) Availability of nutritional information

Development of packaging and Point of Sale (POS) data

Phoenix Agencies of Regina was approached with the concepts above and requested to develop packaging for a range of Bison strips and a Garlic Coil together with Point of Sale (POS) brochure. Samples of the products were made available so that photographs could be included in the preparation of ideas.

Samples of the packaging designs developed by the Phoenix Group were presented to a meeting of the Saskatchewan Bison Assn., University of Saskatchewan, Saskatchewan Food Product Innovation Program and Saskatchewan Food Industry Development Centre representatives.

Based on these designs, work was carried out in cooperation with the Saskatchewan Food Industry Development Centre to ensure that all details complied with Federal Government labeling regulations. Committee members, on an ongoing basis, subjected samples of the final packaging to be used in the retail trials, to scrutiny. Initially a 900 g box for the strips, containing 2 x 450 g packs was proposed but this was subsequently modified to a single 450 g unit after discussions with retailers, based on consumer preference and cost of finished product sensibilities

In addition, data was provided from the Canadian Bison Association regarding nutritional comparison of bison meat with other species. This data has been used on the Point of Sale (POS) brochures. As far as the nutritional content of the individual products developed in this project, definitive data will need to be obtained and included on the packaging within the next 24 months. Further, UPC codes will need to be obtained for marketing but these will only be required once decisions are taken as to further product manufacture in the future

Selection of potential retail market outlets

The University of Saskatchewan taste panel trials indicated that there was a definite acceptance tied with higher preparedness to pay a premium for bison products in Quebec. There was also interest in bison products in western Canada, but lower interest in the Ontario markets.

Preliminary trips were made to visit with a number of potential retail and wholesale outlets in Vancouver, Toronto and Montreal as well as locally in the Edmonton, Saskatoon and Regina areas. A total of 5 companies were approached in the Vancouver area, 9 in the Greater Toronto area, 7 in the Montreal region, 2 in Edmonton and 4 in Saskatchewan.

One of the major concerns when approaching these companies was the limited quantity available for a retail trial. Companies had concerns as to guarantee of continuation of supply after the trial while steps were taken to potentially put production onto an ongoing basis.

These contacts lead to the selection of the following companies with a higher level of interest to provide samples of the products for evaluation prior to carrying out retail trials of the bison strips and the garlic coil:

1) Metro Richlieu in Montreal
2) Haut Panaches in Montreal
3) Hills Foods in Vancouver
4) Federated Coop in Regina, Saskatoon and Calgary
5) Hungarian Club in Regina
6) La Bodega Restaurant in Regina
7) Mediterranean Bistro in Regina
8) Pusateri's Meat Market in Toronto
9) Bruno's Meat Market in Toronto
10) Saslove's Meat Market in Ottawa

Quantities of product were provided to these companies and they were requested to evaluate the acceptability of the product as well as the conceptual focus outlined above. They were provided with costings for retail and wholesale sales (Appendix 4) and requested to indicate their preparedness in carrying product for their respective customers.

Market trials-

Due to delays in finalizing the packaging and ensuring all Federal requirements were fulfilled, trials only commenced in retail outlets on July 15, 2003.

1) Federated Coop

The first retail trial commenced at Federated Coop Marketplace in Regina. Based on sales generated in the first weeks of this trial and the anticipated sales generated by the promotion of bison strips and garlic coil took place on August 1 and 2.

These trials were extended to the 3 Coop outlets in Saskatoon and samples were assessed at Federated Coop outlet in Calgary.

Following discussion with Fed Coop meat director Ken Crump, samples of the stir fry and garlic coil were provided to the three Saskatoon outlets. Samples were also sent to John Middleton of the Coop in Calgary for assessment.

Federated Cooperative Regina Outlet
Trial on Aug 1 and 2 2003
80 units of strips sold
50 units of coil sold
60 questionnaires returned (Appendix 5 and Appendix 6)
All questionnaires gave positive responses regarding taste ad tenderness

Demonstrator's comments:

- Considering the very poor traffic levels, we felt your products were well received.
- Consumers were "very impressed" with the excellent taste, quality in all products presented.
- Delicious seasonings in all varieties of strips; coil garlic a noted favorite.
- No "gamey" taste, lean, yet very flavorful
- Nutritional information presented appreciated along with cooking suggestion
- People at this location generally very receptive to all Bison products; Sask. Bison a "plus'

Sales of all 4 products have continued in the Regina outlet of Federated Coops since this time. These sales have been at a relative low level of approximately 5 strip units per week and 10 coil units per week. It is the opinion of the Meat Manager at this outlet that the products have a long-term viability subject to regular promotion of them over the coming 12 months.

Limited quantities of the strips and coil were provided to the three Federated Coops outlets in Saskatoon. Sales here have been low due to the fact that no promotion has occurred at these outlets to date. All three Meat Managers initially expressed interest in the possibilities of such promotions in the future. However, following poor sales in all three outlets, they declined offers for further promotion of the products.

2) Metro Richlieu
Samples have been evaluated by Metro Richlieu's new product team and both the Strips and coil were considered for addition to their retail displays at a meeting of the company new product committee. (July 23 and 24, 2003)

The plan was for products to go on the shelf of a single outlet in Montreal, which specializes in natural organic and exotic products. The new product committee decided not to proceed with the products at this time, despite the positive evaluation for the products. (Verbal comment to P Wilkins from Head of Meat Division of Metro).

3) Haut Panaches
This company evaluated samples and felt they can provide service to the restaurant and hotel catering areas if the products are available in catering size packaging. They suggested 2kg quantities and initial costing have been provide for these packaging sizes. However, Federal approval of a label is required and has not as yet been formally requested. In view of the trail with La Bodega in Regina, involving the restaurant trade, no further contacts were pursued with Haut Panache

4) Hills Foods
This company, located in Vancouver, indicated that they would be interested in the strips after evaluating samples. They requested deep discounting once advised of costings and even when provided with a modest discount have not made any further contact despite a number of follow-up contacts. In view of Federated Coop's willingness to proceed with trials based on the costings provided, no further contact was made with Hills Bros.

5) Hungarian Club
The Hungarian Club is located in Regina and they used both garlic coil and strips. The following comments summarize the clientele's reaction at this outlet.

> "Overall, the majority of our clientele commented that they felt there was too much sage or poultry spice in the sausage. This is due to the fact that the majority of our members have made their own deer sausage for years and are accustomed to their own recipes and spices. Initially the stir-fry was being overcooked but once it was prepared properly this item was received well by our members. The comments were very positive"

In view of the seasonal nature of meals being catered at this facility- the trial was terminated and other restaurant outlets chosen.

6) La Bodega

Trials commenced in this Regina restaurant at the beginning of July. In addition to verbal comments, a questionnaire was made available to La Bogeda for distribution to their customers (Appendix 7). The interim report from the owner/chef Adam Sperling is shown below:

> " We have been using the marinated bison in various capacities. Such as: Fajita Wraps, Stir-fried over rice vermicelli, sautéed with cilantro pesto on linguini, mesquite bison stew, oriental ginger bison, bison teriyaki with shitaki mushrooms, bison curry, Jambalaya. These are a few of the applications where your product was used. I must comment that following the instructions on the packets provides you with a rather tough result. I have conducted some tests with tenderizing by adding red wine or red wine vinegar to your already marinated product and came up with satisfactory results. I also experimented with the ginger bison by coating it with corn starch and deep frying adding the sauce after cooking (this worked great)."

A subsequent report was issued by Adam Sperling covering the trial for the entire period from July to October, 2003

Adam Sperling
The Med Bistro Group
2801 Regina Ave,
Regina, Saskatchewan
S4S 0G4
535-8175 (cell)
546-3660 (day)

Report to the Saskatchewan Bison Association

I would like to thank the Bison Association for the opportunity to work with your representatives and explore the possibilities of preparing bison cuisine for the retail market.

We have been conducting trials with the bison strips and garlic coil over the last few months extensively at La Bodega and occasionally at the Mediterranean Bistro. We have found that

our clientele is very receptive to any bison products. We have received very positive responses to the bison used in the trials. We have not received any negative feedback from clients during these trials.

However, we found that following the cooking instructions on the retail packaging of the "seasoned bison strips" produced a very tough outcome. We therefore strongly recommend that the marinated bison be sold pre-cooked in order to facilitate preparation for the general public. We feel that the bison sausage is an excellent product and will be well received in the retail market.

In conclusion, we feel that the general public is ready and willing to purchase pre-packaged bison if it is available at a competitive price and is readily available. We wish to again express our appreciation for letting us participate in these trials and will continue to support the Bison Association. We will continue to use bison in our restaurants and look forward to the success of your product. We would be happy to provide further suggestions and assistance at any time.

7) Mediterranean Bistro

This restaurant is situated in Regina and is associated with La Bodega. They cater to a different clientele, mainly serving high-end value luncheons. Sample product was provided to them on July 22 for evaluation. The restaurant is co-owned by Adam Sperling of La Bodega and his comments are included in the assessment given above.

8) Pusateri's Meat Market
This is a high-end market just off the downtown area of Toronto. Management of the market tested both the garlic sausage and the marinated bison strips. They were positive about the marinated bison strips and prepared to do a full retail trail in the spring of 2004.

9) Saslove's Meat Market
Both locations of Saslove's Meat Market in Ottawa participated in a retail trial with both the garlic sausage and the marinated bison strips. While the quality of both products was judged to be very good, consumer interest at these markets was low. The principals believe that the product would retail more effectively in a supermarket environment rather than in specialty meat stores such as these.

Recommendations

1) That the retail sales at Fed Coop be continued to establish markets. Contact should be made with Ken Crump of Federated Cooperatives to discuss private labeling of the bison products within the COOP stores.
2) That these markets be extended to Calgary Coop and other centers, already identified as part of a marketing initiative of a yet to be established marketing and production entity.
3) That steps be taken to initially arrange for on-going manufacture of product for supply to existing outlets and to establish a joint venture for the manufacture of the bison strips and garlic coil.
4) That this product range be extended to include other products developed at U of S, including smoked meat roll, and kebabs.
5) That Metro Richlieu and other Ottawa based companies are approached again to establish a market in Montreal and Ontario.
6) That the Sask. Bison Assn. apply for funding to investigate the best options to have the current products remain in the current markets, to establish a short term agreement for the manufacture of such products and investigate on-going options.
7) That the current pricing of products be maintained (Appendix 2), subject to 3 monthly review.
8) That steps be taken to plan for the long term manufacture of products either through custom processing by the Association, joint venture agreements or by sale of the technology with retention of licensing income to the Association.
9) That the Association facilitate bringing together representatives from the breeders, suppliers, slaughter houses and retail marketing to develop integrated options for the industry.
10) That the marketing of bison products provide a full range of uncooked roasts, steaks and other portions together with secondary processed bison products, either independently or in conjunction with a large retail outlet.
11) That the Saskatchewan Bison Association, in conjunction with those representatives identified in 9) above develop an integrated promotional program for the sale of bison meat products.

Appendix 1

AGREEMENT

Agreement between	Peter Wilkins and Associates 2806 7th Street East, Saskatoon, SK S7H 1A8 (hereinafter referred to as Wilkins)
And	Saskatchewan Bison Association, P.O.Box 36011 Regina, SK S4S 7H6 (hereinafter referred to as The Association)

Project Description

Wilkins will work closely with the members of the University of Saskatchewan product development team to establish the types of products potentially available for market trials and a long-term marketing plan and supply chain strategy for the Association. These products are based on the utilization of trim portions from large muscle group bison cuts. It is expected that the products will include a bison stew, bison burgers, a garlic sausage coil and marinated trim and lower value muscle portions.

During the development stages of these products and while they pass through their focus trials, Wilkins will investigate potential market outlets to allow for long term development of the bison industry. It is expected that food-marketing company(s) will be identified in a number of regions of Canada and that the company(s) will also facilitate the entry of bison meat products into the restaurant trade.

These companies will be identified in an initial Internet search and contact will be made with the sales personnel concerned. Once an exchange of information has occurred, Wilkins will make on-site visits to the selected companies to discuss strategies for a market trial of the products developed by the University of Saskatchewan group.

These market trials will be carried out and assessed further with on-site visits to the selected outlets and restaurant(s).

Based on the trials, recommendations will be made on:
1) a long term marketing strategy for the Association,

2) supply chain linkages,
3) utilization of not only large muscle cuts of bison but also trim and its subsequent processing

4) potential strategies for promotion of bison products, consumer information and strategies for the Association to disseminate to its members and other stakeholders.

Deliverables

The deliverables will be as follows:

1) list of relevant food marketing companies in selected regions of Canada (10 days)

2) agreement(s) with one or more of these companies to carry out a trial of bison products produced through trials at the University of Saskatchewan (20 - 30 days)

3) survey results of the trials from food marketing company and at least one restaurant outlet regarding the products (10 days)

4) recommendations for long term marketing strategy with respect to the bison meat products, their pricing and promotion (15 days)

5) recommendations for the supply chain linkages in the bison industry (10 days)

6) all interim reporting and expense claims involved in the delivery of these reports (10 days)

Note: the number of days for each item of the deliverables is a total of the hours and/or days required over a longer period.

Charges

The Association agrees to the following terms for the contract.

1) The contract will start on the 5th day of March 2002 and continue to 31 March 2003,
    i) subject to the 2 week notice to terminate contained in the AgriFood Innovation Fund contract,
    ii) mutually agreed termination of the contract between the Association and Wilkins,
    or iii) by one month notices in writing by either party to the agreement.

2) Wilkins will charge $30 per hour for work carried out on behalf of the Association to a maximum of $240 per day.

3) Mileage, meals and accommodation costs will be reimbursed to Wilkins at Federal government rates for all travel outside of the Province of Saskatchewan and at Saskatchewan Government rates for all Provincial travel within Saskatchewan.

4) Any Inter-provincial air costs will be booked to obtain maximum savings. All expenses for such travel will be reimbursed after the completion of the travel. If weekend accommodations are required to ensure overall savings on these flights the cost of such accommodations will be borne by the Association.

5) Wilkins will use an established long distance telephone line and fax line and the Association will cover the costs of use of these lines for Association work.

6) All claims will be submitted to the Executive Director of the Association on a monthly basis.

7) Wilkins will provide an update of progress and expected travel to the Executive Director every two weeks, either verbally or by email to ensure ease of budget control.

Peter Wilkins
For Peter Wilkins & Associates

Robert Ford
Executive Director
for Saskatchewan Bison Association

Appendix 2

Summary of comments from retail outlets and potential carriers of bison meat products

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1) The retail trade is looking for prepared, ready to cook/ ready to serve/ microwaveable meat products and the supermarkets are carrying these products in increasing quantities and range of products. Included are cutlet and nuggets portions, pre-flavored portions as well as deli style smoked products.

2) Products that allow the consumer to try new and different products that could fit in the deli and chilled prepared shelves as well as frozen portion and frozen portion pack market are of increasing interest to consumers.

3) Bison products would be of interest but any premium on the product over beef would require a perception of "better value" and promotion of the healthy benefits due to leanness

4) Within the burger market, there is a wide choice of basic, flavored, beef, chicken and turkey burgers and bison would have to compete with no real price advantage unless it was extensively promoted as a healthy alternative

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Appendix 3 Questionnaire presented to customers at Agribition 2002

Please take a moment to complete this questionnaire as your response is greatly appreciated by the Saskatchewan Bison Association.
Have you tried bison before today? Yes ( ) No ( )

What did you buy today?

What was your overall reaction to this dish?

Will you be buying bison dishes again?

Would you like to see bison in an easy to prepare package in your local supermarket?

Appendix 4 Questionnaire prepared for consumers at retail trials.

What flavor did you taste?

MESQUITE
GINGER TERIYAKI
ROASTED GARLIC

Is the flavor
1) too strong?
2) too mild?
3) to your liking?

Knowing that the meat of bison is low in fat and cholesterol, would you purchase this product?

YES
NO

If you indicated that you would purchase the product, would you

1) Purchase on a) weekly basis?
b) monthly basis?
c) only for special occasions?

2) Be prepared to pay for the product if it were

a) more expensive than beef?
b) more expensive than pork?

c) more expensive than poultry?

Appendix 5 Questionnaire provided to customers at retail outlets

Saskatchewan Bison Association
C/o 2806 7th Street East Saskatoon SK S7H 1A8
Email: bisontrial2003@hotmail.com

Please take the time to let us know what
you think of our new products.

Which product did you taste?
Ginger Teriyaki Strips ( )
Mesquite BBQ Strips ( )
Roasted Garlic Strips ( )

Bison Garlic Coil ( )

Was the product

	Yes	No
Tasty?	( )	( )
Tender?	( )	( )

Would you purchase it again?
( ) ( )

Any other comments about the product?

Appendix 6 Questionnaire given to La Bodega customers

Please take a moment to complete this questionnaire as your response is greatly appreciated by the Saskatchewan Bison Association.
Have you tried bison before today? Yes ( ) No ( )

What did you buy today?

What was your overall reaction to this dish?

Will you be buying bison dishes again?

Would you like to see bison in an easy to prepare package in your local supermarket?